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ABSTRACT

This is one of several study guides on contemporary problems produced by the American Association for the Advancement of Science with support of the National Science Foundation. This document is a state of the art report on "social impact assessment." Four components of this process are examined: (1) the problem of social impact assessment; (2) approaches to social impact assessment; (3) the methodology of social impact assessment; and (4) the future of social impact assessment. Included in the document are a narrative, a variety of papers and exhibits, and two extensive bibliographies related to the topic. (RH)

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TEST EDITION

ED157793

Arthur H. Livermore

SOCIAL IMPACT ASSESSMENT

CP WOLF

AAAS Congressional Science Fellow
Office of Technology Assessment

|A|A|A|S| Study Guides on Contemporary Problems

A part of the
NSF Chautauqua-Type Short Courses for College Teachers Program

CF 024812

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The test editions of the set of six Study Guides were prepared on relatively short notice by the course directors during the summer of 1975. To provide as much information as possible to the authors for use in revising this study guide for publication, we ask you as a participant in the NSF Chautauqua-Type Short Course to test these materials and provide your reactions. Also we would appreciate receiving reactions of your colleagues and students if that is possible. Your efforts will contribute significantly to the quality of the revised Study Guide.

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We hereby gratefully acknowledge the services of Joan G. Creager, Consulting Editor, and Orin McCarley, Production Manager for this series.

Arthur H. Livermore
Acting Director of Education
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AUTHOR'S PREFACE

This draft Study Guide is only a fragment of the outline that follows. That outline is a promissory note I will be redeeming throughout the year by supplements to the Guide. The "Study Guide" is just that; it is far from an integrated text that the subject requires and whose preparation continues. The principle I have followed in assembling these materials is to make available the most useful collection possible at this time in a dynamic and volatile field of study. These materials are meant to be used in conjunction with other course materials: C. P. Wolf (ed.), Social Impact Assessment (Milwaukee, WI: Environmental Design Research Association, 1974); the special issue of Environment and Behavior on "Social Impact Assessment" (September 1975); and what is to my mind the most practical guide to field practice now available, Dave Smith's Social Impacts Notebook. It should be emphasized that this latter is also presently in review draft form, and your comments on it will be welcome.

There are large segments of the outline missing from the present Study Guide, notably in the second half of the "text." Chapter 4, "The Methodology of Social Impact Assessment," will be filled within the next few months by a collection of methodological essays and applications edited by Kurt Finsterbusch and C. P. Wolf (Stroudsburg, PA: Dowden, Hutchinson and Ross, 1976). The material contained in Chapter 1 is basically a condensation of the "state of the art" article in (Wolf 1974). It will appear in Sociological Practice, 1, 1 early in 1976. The material in Chapter 2 was drawn from a paper, "Social Impact Assessment: An Agenda for Future Research," presented at the Quail Roost Workshop on Urban Water Resources Research, Quail Roost, NC, 25 July 1975. Hence its orientation toward urban water resources development and management. The portion of Chapter 3 that appears was given as a paper entitled "Socially Oriented Impact Assessment," given at the Environmental Impact Analysis Conference, Allerton House, IL, 8 September 1975.

In compiling other materials in the Guide I have freely drawn on the work of many colleagues, among them:

Raymond Gold
R. N. Singh
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C. P. Wolf
23 September 1975

Overview

This is a state of the art report on "social impact assessment." We will examine four components of this process: (1) the problem of social impact assessment; (2) approaches to social impact assessment; (3) the methodology of social impact assessment; and (4) the future of social impact assessment.

THE PROBLEM OF SOCIAL IMPACT ASSESSMENT

Technology as Environment?

The relationship between environment and technology, or nature and culture, has become inverted in the evolution of society. Originally, social life was environmentally conditioned if not outright determined. A great reversal occurred with the advent of cultural controls over environmental conditions, primarily through the agency of technology. By means of such cultural interventions, passive at first and later actively asserted, the technosphere has come to dominate the biosphere. This "environmental revolution" (Nicholson, 1970) may yet encounter its counterrevolution, wherein these roles are reversed--that is the message of various catastrophisms and doomsday scenarios. But in the historical present, it is the human impact on environment that predominates.

Now a curious transposition has taken place. Technology, socially directed or influenced from its inception, has merged with the environment. It is not only a matter of environment as the recipient of technological damage and the carrier of its malignancies. Technology has been assimilated to environment in respect to its pervasiveness, its externality or human estrangement and the precariousness of cultural controls exercised over it. In this emergent

condition of "technology as environment" (Ogburn, 1956), it appears that technology is acting on--"impacting"--us rather than we directing its course. The problem of social impact assessment (SIA) is not so much what we are doing to the environment; it is what we are doing to ourselves through the medium of environment by technological misapplications.

In the past, social scientists' own definition of the analytic situation has tended to reflect and reinforce technologic basis. The main pattern for SIA was set in Ogburn's (1922) classic formulation of the "cultural lag hypothesis," wherein changes in material culture are said to induce alterations in the non-material, "adaptive culture." A classic study of this relationship--apart from Ogburn's own pioneering work (e.g. 1946)--was W. F. Cottrell's "Death by Dieselization" (1951):

... here is the average American community with normal social life, subscribing to normal American codes. Nothing its members had been taught would indicate that the whole pattern of this normal existence depended completely upon a few elements of technology [e.g. high tensile steel for locomotive boilers] which were themselves in flux. For them the continued use of the steam engine was as "natural" a phenomenon as any other element in their physical environment. Yet suddenly, their life pattern was destroyed by the announcement that the railroad was moving its division point, and with it destroying the economic basis of Caliente's existence. (p. 359)

As Cottrell observes (1951: 360), "The story is an old one and often repeated in the economic history of America. It represents the 'loss' side of a profit and loss system of adjusting to technological change. Perhaps for sociological purposes we need an answer to the question, 'just who pays?'" Who paid most in Caliente were those who, by traditional American standards, were most moral--most conforming to settled community and family life and accepting of "our traditional

system of assessing the costs of technological change . . . on the theory that the costs of such change are more than offset by the benefits to 'society as a whole.'"

The effects of engineering works are thus distributive in nature, the incidence of social benefits and detriments falling unevenly and unequally over various sectors and segments of the population. This will increase the more highly differentiated the society becomes. Conversely, there are differing claims and demands for public goods and services to be honored or refused. One value ascendant since "Great Society" days is that of social equity; projects are meant to have redistributive effects on the availability and accessibility of social opportunities--in employment, recreation, cultural participation and other areas (Lampman, 1974).

The strained assumption of a "market" model of society working distributive justice has in recent years been replaced by an assertion of public responsibility in adjusting to technological change (Turvey, 1966; Levitan and Sheppard, 1963). The "socialization" of technological change now enters on both sides of the equation, however--cause and effect. "Social technology" goes beyond recognition of the social knowledge in policy formulation and plan implementation. It has become active and often decisive in shaping the contours of society, and itself represents a source of major social impact.

What Is SIA?

Perhaps the most direct way of defining SIA is by analogy with the environmental impact assessment required by Section 102 of PL 91-190, the National Environmental Policy Act of 1969 (NEPA). Following the NEPA precedent, "social impacts" are then understood

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as an extension or broadening of environmental impacts and, indeed, procedures for SIA do generally resemble those prescribed for environmental impact assessment. But at the most general level, the problem of SIA is a problem of estimating and appraising the condition of a society organized and changed by large-scale applications of high technology.

If the broad definition of SIA can be given "simply" as the relatedness of social things, it can be narrowed to particular situational and institutional contexts and specified in particular aspects and concerns. Situationally, it can be located in those circumstances and cases where human, usually governmental, intervention is intended or believed to affect the social condition. SIA is thus a procedure for anticipating, in Merton's (1936) phrase, "the unanticipated consequences of purposive social action," and thereby to forestall or offset adverse effects to which it may give rise. SIA is in this sense a hedge against uncertainty in the planning process.

Institutionally, familiar contexts of concern for SIA have involved such areas of public works and private enterprise as dams and reservoirs (Wilkening and others, 1973), nuclear reactors (Peelle, 1974), power transmission lines (Young, 1973), highways (Perfater and Howell, 1973), large installations (Breese and others, 1965), weather modification (Haas, 1973), industrial location (Ireland, n.d.), planned community development (Bird, 1973), urban renewal (Williams, Jr., 1970) and resource exploitation (Krebs, 1973). Less common are studies of "natural" conditions where to "do nothing" is to hazard human community and hamper social progress (White, 1974).

SIA symbolizes the assumption of social responsibility on the

part of public authorities and its imposition on private interests. What is being requested--indeed, demanded--is nothing less than the use of social forecasts as a planning base. Insofar as participatory planning is involved, this becomes an exercise in what Toffler (1973) calls "anticipatory democracy." Clearly this implies a significantly higher standard of governmental performance than that previously attained or seriously contemplated. What SIA proposes is to place the expectation of desired outcomes, of legislative enactments and program operation, on a reliable and rational basis--to augment judgment with analysis.

SIA differs from "pure" science largely because of its special relationship to prediction and control. SIA is operationally lodged in these phases by virtue of its "social engineering" and social (policy) planning emphases. Prediction is entailed in making "with" and "without" project projections of the impact area, and control is implied in the requirement to mitigate adverse effects of project construction (Office of the Chief of Engineers, 1972: A-2-5).

What is the substance behind this impressive symbolism? "Is social science ready?" (Spengler, 1970). Can the scientific quality of social knowledge bear the analytic weight being pressed upon it? Does this ambitious program incline towards utopian planning on the one hand (Boguslaw, 1965) and totalitarian planning on the other (Popper, 1957)? Boguslaw's "new utopians," it will be recalled, were not social scientists but systems analysts; still the apprehension remains. Since the days of Joseph Wood Krutch's humanistic critiques, there has been an equal and opposite fear--not that social scientists will fail, but that they will succeed only too well. The

Federal prison experiments on behavior modification, with all their "Clockwork Orange" overtones, betrayed (and belied) this great fear (Holden, 1974). There is a respectable body of opinion that holds social science will never be predictive in the same sense as physical science. A scientific attitude compels the reply, "That is an empirical question." And, on the faith of a rationalist, it is knowledge most worth the having.

The "need to know" in SIA has been invoked primarily in regard to the "social effects" of technological change. As Eigerman (1973: 1) says, "Technology can visit upon its implementers wholly unforeseen and undesirable consequences . . . It follows that prudent men will scrutinize the intensive application of any new technology and try to anticipate the changes in physical, social and economic environments that it may induce. Impact assessment is precisely this forecasting and analysis exercise."

The common characterization of social impacts as "secondary" underscores their relative neglect. Coupled with this is the often impressionistic nature of SIA, contrasting with the more certain and precise knowledge of technical effects. Fundamentally though, what engineering is about is people and their values; it stands in the relation of providing material means to the satisfaction of human needs. From this sociological commonplace it follows that civil works projects, say, are supposed to have social impacts. Such impacts are not merely incidental; rather they are the essence of engineering practice.

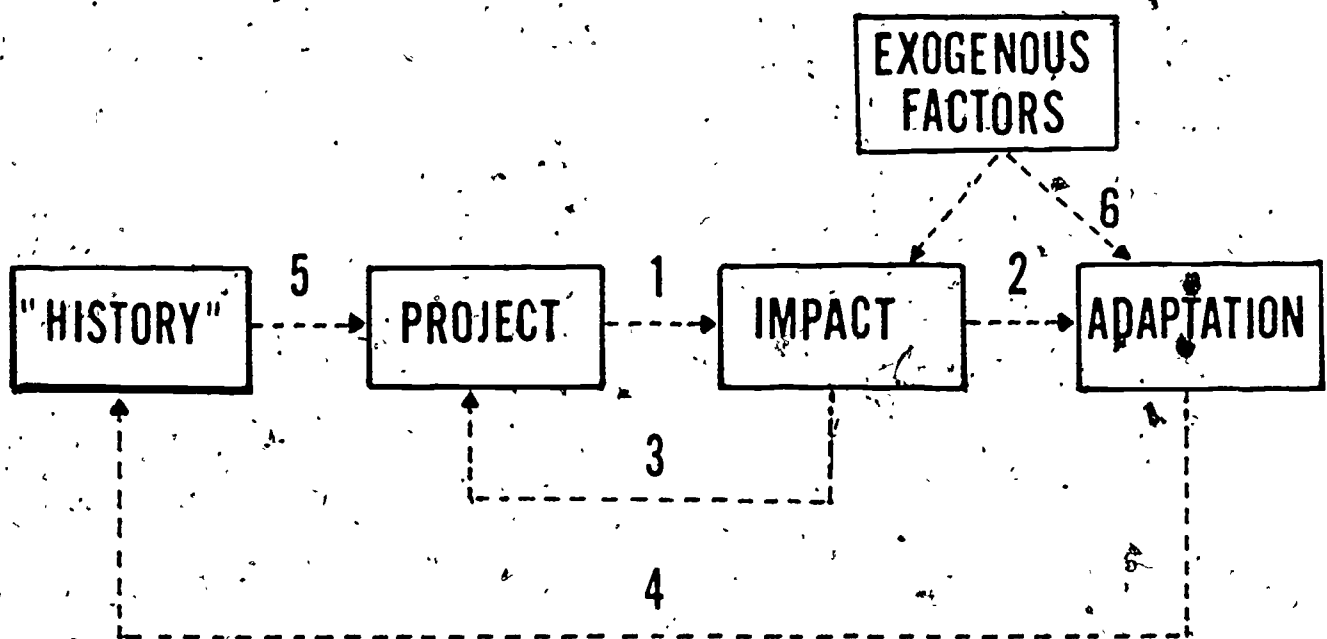
APPROACHES TO SOCIAL IMPACT ASSESSMENT

With this preliminary statement of the analytic problem, we can proceed to a review of approaches by which it might be effectively engaged. The leading contender is what Baur (1973: 3) terms the "interactive approach." He gives this rationale: "Instead of assuming that the social effect is the result of a specific cause or a chain of causes that are traced to a technological innovation, I propose that we think of an effect as the outcome in the form of altered human conduct of the interaction between the agents of change and the people who have an interest in the proposed public works project." On this approach we understand that social factors are as much the cause of SIA as they are the effects.

The Interactive Approach to SIA

Consider a simple S-R model where the stimulus is provided by some engineering project in planning, construction or operation, and the response is the social impact of that phase of project life. Undoubtedly, that is the simplistic view of the matter held by some. Complications arise when it is seen that in no case can the impact be considered a "point event"; rather the effects linger and intermingle with others appearing later. When these "interaction effects" are recognized, together with exogenous factors, the analytic problem appears anything but simple. The figure below suggests a number of complexities:

INTERACTION EFFECTS IN S.I.A.



The direct impact (1) is a deformation in the state variables describing initial conditions, but if analysis were to end there it would severely distort the reality situation of SIA. The continuing effects of readjustment and adaptive change represent a sort of "feed-forward" (2). We can further hypothesize a differential social responsiveness on the part of impacted units. Conversely, in the planning phase the direct impact may result in a kind of "reaction formation" which impinges on project planning itself (3), in the form of public opposition and plan modification. Moreover, the project itself may be regarded as the social effect of a social cause--its "history" as a prospective solution to preexisting concerns, problems and issues residing in the affected area (4), and this history conditions public receptiveness at the points of impact and subsequent adaptation (5). Finally, the intrusion of exogenous variables (6), whether random or systematic, compounds the problem of attributing measured effects to planned interventions.

Substantive Approaches

What selections and sets of variables can be drawn from the universe of impact parameters? Answering this question leads back into the cataloguing of social impact categories, and indeed, to the very conception of "social" itself. Within the social category proper there are various aspects that receive varying emphasis: cultural impacts, which have been given operational definition in archeological sites and ethnic groups; value impacts; esthetic impacts (possibly a joint effect of "cultural" and "value" impacts); demographic impacts; institutional impacts, including specific functional areas such as recreation and family structure. The list could be extended and

refined, and in keeping with the interactive approach we could introduce corresponding categories of social cause as well.

Perhaps the most strategic approach to SIA might be expected to model itself on the growing research tradition of program evaluation. The first condition of evaluative research is that program objectives be clearly stated; failing that, there is nothing to evaluate. The chief obstacle to SIA's adopting the evaluative research model is the unwillingness or inability to elevate social performance to the rank of a planning objective. Rather, social impact assessors are asked to treat their subject systematically, as unwanted and undesirable by-products or side effects of the serious planning business.

Senate Document 97 (U.S. Senate, 1962): 2) announces, "Well-being of all the people shall be the overriding determinant in considering the best use of water and related land resources." Its successor, the Water Resources Council's "Principles and Standards" (1973), reaffirms the overriding consideration for "quality of life" and purports to express "societal preference" in its planning guidance. The extent of its success in this endeavor appears quite limited. "Social well-being" dwindles to the depressed status of an "account" consisting of real income distribution, health and safety, and a leftover from obsolete legislation on emergency preparedness.

Methodological Approaches

Exploring different content categories entails differing methodological approaches--for instance, the application of standard ethnographic techniques in assessing cultural impacts. Here our concern is with alternative research strategies, of which the

"deductive" and "inductive" approaches are emblematic. On a deductive approach we would ideally begin with a concept, convert it to a variable, hypothesize a relationship between variables to achieve a theoretical formulation, then develop indicators (referents) and measurement techniques to determine the direction and test the strength of association, finally arriving at a parameter estimation. This ultrarational procedure is seldom followed, although experimental and quasi-experimental designs have been urged in evaluative research (Caporaso and Roos, Jr., 1973). To all appearances SIA is still in the "natural history" stage of science-building, at a point far removed from the mature stage of deductively formulated theory.

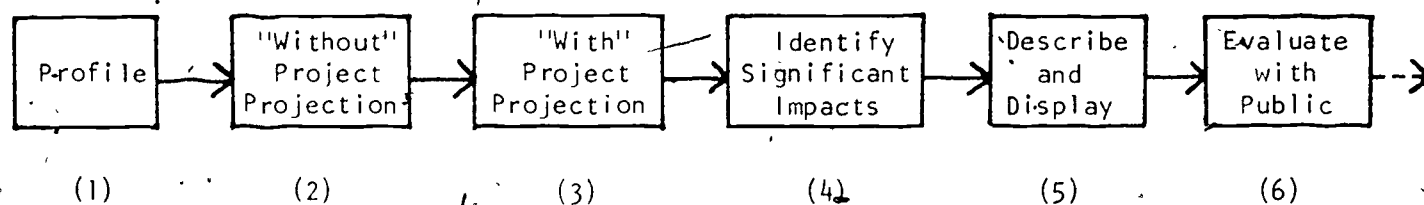
This being the case, inductive approaches--such as case studies of the community research variety--may be felt more fitting. Lest SIA remain in perpetual infancy, however, they should be fielded with a view towards building a cumulative knowledge base. The optimal strategy of inquiry may be a "mixed" one, combining both inductive and deductive approaches.

METHODOLOGY OF SOCIAL IMPACT ASSESSMENT

Impact Assessment Steps

The series of impact assessment steps postulated in Section 122 Guidelines (Office of the Chief of Engineers, 1972), "tells the story" of SIA as operational procedure:

Fig. 2 IMPACT ASSESSMENT STEPS (SECTION 122 GUIDELINES)



These steps form a continuous, "value-added" process, each of which is analyzable in terms of the input received, the analysis performed, and the output produced. In principle, the cumulative effect should be the systematic and comprehensive identification, measurement and evaluation of all significant impacts and their interrelations. In practice, this logic has yet to be carried through to a successful conclusion, though fragments of it have been assembled.

(1) Profiling: The purpose of profiling is to develop a set of social baseline data--in effect, a "before" measure of the impact situation, in anticipation of project-induced changes. Examples of this kind of analysis are Smith (1970) and Wilkening and others (1973). Two methodological problems intrude at this point: (1) defining the impact area boundaries and (2) determining the data points that will dimensionalize and describe the referent system. The extent of impact predicted--and by implication the extent of system impacted--bears on the first question. Roughly speaking, the magnitude of impact can be assumed as proportional to the magnitude of the project, with intensity falling off as a gradient of undetermined steepness from the epicenter of impact.

Two basic attitudes can be taken towards bounding the impact area. One is "project-related" and presupposes an existing project proposal; the other and more difficult is "area-related" and focuses more on accurate problem identification than on specific project justification. "Project-related" area bounding has the advantage of determinancy in what the presumed causative factors, and hence the predictable impacts, are to be--a harbor dredging operation, a floodway clearance, an upstream reservoir or whatever, while "area-

related" is less well specified but more open to consideration of a wider range of social conditions and planning possibilities. On the former, one might ask, "What are the impacts?"; on the latter, "What is the system?" While the water resources planner's typical unit of analysis is a hydraulic system, the social impact assessor's is likely to be a social system, in which the extent of functional dependence and degree of functional integration are crucial to stamping unit character. The "community bias" is especially pronounced in social analysis, though hard to localize in large-scale project planning.

Social impact assessors should not bemuse themselves with visions of "instant analysis." Data interpretation is as much a part of SIA as data gathering and processing, and Kemper's (1974) inconvenient question, "What does it mean sociologically to be of a given age, sex, social class, educational level, race, religion, region, ethnicity, occupation, etc.?" is not easily answered. Conceptual analysis and elaboration of categories such as "community cohesion" is a pressing need; the tacit assumption is one of a consensus model, whereas community conflict is often the situation of fact.

(2-3). Projecting: The system profiled is a dynamic one; time series data must be generated for purposes of trend extrapolation, to forecast deviations from base conditions established in the profiling step. There are two states of the system projected over project life, which may be upwards of 100 years: "without" project and "with." As Eigerman (1973: 4) observes, "everything changes whether a given plan is implemented or not. Therefore, plan-induced change is not the difference between what is forecast 'with' a plan and some steady-state 'today.' It is the difference between two

forecasts; what is anticipated 'with' the plan and what is anticipated 'without' it." The second anticipation, "without project," entails making a general social forecast; "project-related" definitions of area and derivations of impact are insufficient.

(4) Identifying significant impacts: This is not a simple operation. The criteria of significance are already preconceived the categories of effect that enter the profiling of step (1). Moreover, the net balance of effects can only be measured here and not weighed in comparative judgment until evaluative factors come into focus in step (5). What is sought in this step is an objective appraisal of impact magnitudes, without fear or favor. Yet even that dispassionate analysis is beset with difficulty.

The general methodological requirement for SIA is essentially the same as for any controlled scientific experiment. Unfortunately, social impact assessors are seldom in a position to exert the requisite experimental controls. Moreover, they cannot establish truly experimental conditions because the analytic problem is predictive in nature. At best, they can perform what Weber called "mental experiments" and hope that the outcome will be isomorphic to the unfolding reality situation within some tolerable margin of error. The problem of social prediction is further complicated by the condition Duhl (1967) depicts of planning "when you don't know the names of the variables." Worse still, prediction must be contingent on public authorities and private interests orienting their future actions in accord with present expectations.

The kind of experimental controls a social impact assessor can exercise over independent and dependent variables is given in the

available mix and choice of planning alternatives. But assignment of hypothetical values, uncorrelated in the predictive case by application of empirical controls, stretches the deductive chain to tenuous lengths after a few interactions. Although second-order consequences are generally acknowledged, little analysis has been directed to tracing indirect effects. Coates (1971: 228-9) has assessed the effects of automobiles, refrigeration and television through sixth-order consequences (all of them found conducive to breakdown in community and family life, perversely enough), and cross-impact computer programs such as Trend Impact Analysis (Becher and Gerjuoy, 1973) provide at least the technical capacity for analyzing complex interactions. Similarly with respect to "internationalizing externalities," through more comprehensive systems mappings or other means, the methodological problems engendered by acceptance of an interactive approach appear overwhelming in the present state of the art. The social scientists' response to analytic complexity has been to intensely cultivate a wide variety of methodological approaches more or less adaptable to SIA.

(5) Displaying and describing impacts: Information displays based on inoperable or invalid methodologies will be artifactual at best and mischievous at worst. Without denying the useful work of Miller and Byers (1973) and others, it seems fair to say that a clear and present danger exists of "premature quantification," foregoing the hard analysis prescribed above. The conjunction of terms, "describe and display," does signify a willingness to entertain "qualitative" variables, values and analyses, but the empiricist trend, propelled by the social indicators "movement" and allied forces,

seems irresistible. Whether the outcome will be numerical analysis or numerology is in greater doubt.

(6) Evaluating with the public: Display features are encouraged as providing a basis for public participation in impact evaluation. A sharp distinction is made in Corps doctrine between "assessment" and "evaluation." To this point in the SIA process, technical neutrality has been the norm. "Going public" means now the attaching of values and assigning or weights as to the desirability or undesirability of the impacts assessed. Strict adherence to the fact-value dichotomy, and the segmentation of expert-public roles and relations attending it, is relaxed however in the initial problem identification phase, and the criterion of significance applied in (4) must be colored to an extent by subjective impressions of public preference. Moreover, the dichotomy may be false if it is assumed that "objective" assessments are value-free or that value positions lack factuality. Two essential conditions must be met to elicit participation for purposes of impact evaluation: (1) the identification of publics (plural) and (2) some preliminary structuring of the situation to which their response is invited.

Public reaction is too easily dismissed as apathetic or ignorant; where an expectation of public input is encouraged, at least some attention should be paid to grounds on which the public is approachable and responsive. Use of simulation games such as Impasse (Impact Assessment) (Duke and others, 1973) and visual stimuli such as LAND (Landscape Analysis and Natural Design) (Everett, 1973) are richly deserving of much fuller employment. The discounting of public input occurs also in contention with expert judgments.

The unpalatable alternative is to restore planner biases as to "what the people want." Manifestly, a method of articulating expert judgment and public opinion must be devised. Crawford's (1972) technique of expert responses to a Delphi instrument validated by a random sample's value analysis is instructive to this point.

There are two unavoidable problems of survey methodology we must confront, however. Supposing we succeed at obtaining verbal responses from a representative public, what is their relation to actual behavior? As matters presently stand, "the assumption that feelings are directly translated into actions has not been demonstrated" (Wicker, 1969: 75). But even if we grant some tenable relation between attitudes and actions, we are also aware of shifts in the schedules of public preference expressed over time. The advent of environmental concern as a public issue in the 1960's is one imposing instance. Moreover, we may further suppose that attitude change is itself a function of public involvement. If effective, public participation is a learning process throughout which attitude formation, crystallization and change occur. Anticipating shifts in public preference then becomes part of the predictive problem. Whatever the difficulties, we must agree with Baur's (1973: 2) assessment, "an understanding of social effects cannot be made without regard to the kind and extent of public involvement in the planning and management of the project."

THE FUTURE OF SOCIAL IMPACT ASSESSMENT

Our summary impression of SIA is a mixed one. While the imperative for SIA is manifest in statutory requirement and societal interest, its legal and administrative history has been ambiguous

and ambivalent. The opportunity and occasion for social science knowledge making, effective contact with pragmatic situations of genuine concern abound, yet proponents of SIA and the condition of organized knowledge in their field are in serious disarray. In the fact of this, we might well heed Spengler's (1970: 70) cautious advice: "What is needed is that practitioners of each social science greatly improve its analytical apparatus, limit research commitments to what that apparatus is capable of doing, and so intensify internal discipline as to minimize the influence of ideology and the persistence of fallacy." Yet for reasons stated above, SIA is a radical act. Its adherents must be prepared to assume as much risk of ignorance and error as those who willingly proceed in its absence. In the midst of this confusion, we can however discern some central tendencies and impending trends.

The Legal Challenge

Ours is a legalistic society; the legal system is our chief means of conflict resolution, of relief and redress, as well as prime mover of social change. It would be surprising indeed if requirements and provisions for SIA were not subjected to the same legal challenge as environmental impact assessment. Often the two are inseparable, as one informant, a penologist, disclosed in this communication:

Ever since the 1969 environmental protection legislation, we have become increasingly involved in formulating statements regarding social, cultural, and physical impact of proposed correctional institutions. Our most recent work pertains to the proposed correctional institution at Lorton, Virginia. While construction of this facility would have been a grave error from a correctional point of view, it has been largely our environmental impact study which has brought the project to a halt.

In this instance, penology and not ecology is the point at issue. Is

this barely hidden agenda to be lightly regarded as a perversion of Congressional intent? Or does it rather place a proper emphasis on social impacts and their involvement in physical alterations? The courts will decide, on the grounds of historical and cultural heritage as well as environmental protection. Yet as Greenberg and Hordon (1974: 174) contend, the legal route is a hazardous one: Moreover, although legal sanction is sometime thought to constitute the sole means of enforcing official conformity, they conclude, "judging by the several score of impact statements we have reviewed, the courts have had a minimal, if any, effect on the preparation of the vast majority of environmental impact statements." It may be that SIA will be dragged through the courts and that "impact fees" requiring developers to pay, beyond normal property taxes, the cost of capital improvements that the presence of a project would ordinarily place on the community (Nordheimer, 1974) will be ruled constitutional. However necessary legal compulsion may appear, it is not likely to prove sufficient. Certainly it will not substitute for the regular performance of professionally competent assessments on the part of responsible administrators and their staffs.

Acquiring Competence in SIA

For their part, responsible social scientists will strive to place their best knowledge and judgment at the disposal of social impact assessors. Their reward system will need realignment, extending professional recognition to colleagues who dedicate professional lives to this calling, or who volunteer their expertise in advisory roles. Academics will have to come out of their cloisters to engage real world problems on its terms, not their own. They must grant the

social truth of others' experience, even as they demand respect for their own learning. In consultant roles, they will regard the problem of SIA more as intellectual challenge than income supplement.

Conclusion

Practice makes better. Though still primitive, the state of the art of SIA is rapidly improving. Two years ago there was no such field, and scarcely more than a glimmer of interest. Today there is a fast-growing body of literature (Wolf, 1974; Shields, 1974; Vlachos and others, 1975; Wolf, 1975; Finsterbusch and Wolf, 1976) and research in progress. The real cutting edge of SIA however is the actual practice of growing numbers of social impact assessors, in all quarters and sectors of an increasingly knowledgeable society. It is too early to speak of a SIA "movement," but the directions are set and movement is perceptible across a broad front of interest and activity. There will be obstacles in our path; nobody said it was easy. Overcoming them will be the work of perhaps generations to come, but a beginning has been achieved. What matters now is what follows afterward.

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1. The problem problem. Simply stated, the "problem problem" is that there is no specific legislative or analytic requirement to perform social impact assessment (SIA). On the side of agencies, there is the easy assumption that either social impacts are adequately covered in benefit-cost analysis or that there is no warrant to cover them at all. Beset as they are with normal operating pressures and planning complexities, they are scarcely receptive to the additional complications that SIA introduces. Such concerns are not real, merely "self-inflicted." From the side of the professions, the attitude is that SIA is "what we always do." If so, it remains that until NEPA there was no operational context with which such research made effective contact. The origin of SIA in the public sector and the impetus given it there have served to reinforce professional insularity. A further manifestation of this problem, when recognized, is the divergence in approaches between academic professionals and operating agencies, the former typically adopting a research orientation and the latter adhering to more routine planning practice.

2. The problem of interest. Federal recognition of the problem of SIA has been slowly evolving since the early 60s; highway legislation was an early leader in this respect. The Federal interest in SIA might be said to have culminated in NEPA, except that "human environment" is highly equivocal in that landmark act. Only now are judicial interpretations beginning to address substantive social concerns and demand positive social content. More explicit language is written into PL 91-611 (Sec. 122) and 92-500 (Sec. 208), but in both these cases SIA occurs in conjunction with economic and environmental impact assessment and cannot be said a particular emphasis of either (except for its relative neglect in previous legislation). Concurrent requirements for public involvement do suggest a direct social impact of the statutes themselves, however. Counterpart to legislative requirements are administrative procedures such as DOT's "Policy and Procedure Memorandum 90.4" and the Corps' ER 1105-2-105, "Section 122 Guidelines." Recent Federal actions have devolved similar responsibilities on state and local authorities, as in the Action Plan implementation procedures required of state highway planners.

Effective assertion of the Federal interest in SIA will likely create pressures to impose similar standards of accountability and performance on private interests as well. Corporate social responsibility can be expressed and enforced both internally through the mechanism of the "social audit" and externally through the exercise of investor responsibility. While both are extremely tenuous at present, a viable alternative to governmental regulation -- which is to say compulsion -- seems necessary and desirable. Corporate image management will require more than a public relations gesture in this direction.

The problem of interest is basically a quest for constituents. Who is demanding SIA? How effective is that demand? In whose interest is it that SIA be adequately performed? Three publics would appear most directly affected: environmentalists, consumer protectionists and social scientists. The former two have been only slightly responsive to date, while the latter is just now starting to assert its right of interest. Environmentalists might well seize upon social impacts as yet another ground for legal intervention. The public interest research effort has been largely devoted to product safety and general health concerns, with some branching out to environmental issues however. Social scientists' professional interests are whetted by tightening academic job markets, shrinking research budgets and expanding non-academic employment opportunities. Pecuniary interest aside, it is also true that the intellectual challenge of SIA spans a broad spectrum, from technology assessment to historic preservation.

3. The criterion problem. Supposing a "mandate" for SIA to be embodied in recent legislation and acknowledged by the parties-at-interest, still the question remains: What are we solving for in SIA? At the most general level, this is the criterion problem. Were social well-being to be established as a planning objective the answer might be sought in coherent goals, consistent policies and effective programs of collective decision and action designed to achieve that end. In the absence of such we are nevertheless faced with the necessity to formulate guidelines for "adequate" SIA. "Adequate" for what? Pro forma compliance with legislative

and administrative requirements clearly falls below professional standards, however shaky the consensus on which those judgments rest. Rather what is required is a searching examination of the full and proper use of social knowledge and social research in EIS preparation; review, and other administrative practices.

Principles and Standards' predecessor, Senate Document 97, states that the "Well-being of all the people shall be the overriding determinant in considering the best use of water and related land resources." Perhaps that noble sentiment was never intended as more than a rhetorical flourish. The intervening years have witnessed the dwindling away official concern for social well-being until now that account is bereft if not totally bankrupt. The latest thinking reduces the "social" (or, more anonymously, "fourth") account to a consideration of health and safety factors associated with water resources development and management. At that, the deduction of "real income distribution" and "emergency preparedness" is no great loss; both were anomalous to distinctively "social" concerns.*

We are bound to recognize that even when well-intentioned, agency experience has not been altogether favorable. EPA has not succeeded in operationalizing the quality of life concept as a tool for environmental management. The Water Resources Council has not been able to address the SWB account on an analytic par with

*"Real income distribution" would properly be placed in the National Economic Development account, but for the redistributive effects implied. The individualistic treatment of social concerns is an unfortunate inheritance from earlier economic thinking; fuller attention to collective and group characteristics is now warranted. "Emergency preparedness" is illustrated by the efforts to offset a pretended shortage of chlorine for water supply treatment in 1974.

those of national economic development (NED), environmental quality (EQ) and even regional development (RD). Social impact assessment criteria and guidelines have been sought without great success by the Corps of Engineers, the U.S. Forest Service and other Federal agencies. The record in this area seems consistently poor. It should be said at once that this problem is by no means unique to government. Private and professional groups have struggled with it fruitlessly. For example, Critical Choices for '76's "bottom line" is in effect a social well-being criterion, but what goes on that line remains mysterious. Clearly we are in the presence of an acute, and perhaps chronic, state-of-the-art problem.

This merely confirms a marked reluctance on the part of Federal agencies to fully acknowledge the range of concerns implied in such concepts as "quality of life" (QOL) and "social well-being" (SWB). Rather than ascribing such resistance to natural recalcitrance and bureaucratic caution, it might be fairer to say that social scientists have yet to present a convincing case for their cogency and inclusion. If we are someday able to generate a "QOL" or "SWB" with the same facility as economists produce a "BCR," such interest might find readier acceptance. How primitive the present state of social accounting is glimpsed in Cook's (1974: 1.54) reckoning.

From the standpoint of social wellbeing, the evidence is on the side of justification. The threat of sudden death and destruction from floods, although far from eliminated, has been lessened substantially by Canyon Dam. The use of Canyon Lake by more than a million visitors each year with negligible problems of litter, vandalism, or other crime, suggests that the reservoir provides social therapy on a large scale.

What accounts for impoverishment of the social account? One argument is that social well-being in its larger sense--something akin to "the general welfare"--should never have been a goal or even a concern (much less a "determinant") in water resources planning. Social conditions and problems, of health and housing, education and employment, can be attacked frontally through direct social legislation. On this view, shifting the misplaced emphasis on social objectives is cause for relief, not regret. While there is merit to the argument for direct action to cure social ills, recent experience on this score is hardly reassuring. Social legislation of the 60's is badly in disarray; social problems have proved obdurate if not intractable. Conversely, the use of environmental quality controls such as sewer moratoria to stem urban growth has been an effective indirect measure. Coupled with the general acceptance of multiobjective planning, the social implications--if not the social purposes--of urban water resources planning seem inescapable.

A further and more plausible account for the lowly estate of social well-being is the current failure to achieve societal consensus on any major social issue or public program. The dithering over energy policy is but symptomatic of a general paralysis of societal guidance. Caulfield's "blockbuster" paper on dismantling the Federal water resources development establishment implies a more serious erosion of political consensus regarding population and growth, urban and regional development, and perhaps

even environment. The "new federalism" appears an effort to achieve consensus on a less grand scale where, in fact, it may be achievable. Yet the emergent "new urban majority" he recognizes scarcely amounts to an effective urban coalition for all its numerical strength.

Social well-being "objectives" are not operational because they are not objectives. This is not a problem of conceptual understanding or operational measurement; we can very well know and gauge when people are (and think they are) better or worse off. There is no shortage of definitions of the "good life" and the "good society," or of "quality of life" indicators. To the contrary, they can be understood and measured in many various ways. There is no definitive definition or exhaustive measure, however; conceptually and operationally the phenomena are "overdetermined," not underdetermined. Rather the essential problem is one of value consensus and value commitment, and a corresponding commitment of institutional resources. The real problem is the faulty mechanisms of goal formation and consensus building for collective decision and action. To remedy this calls for a normative approach to water resources and related land use planning, not a sterile and pseudo-rational exercise in benefit-cost estimation.

One reason for wanting to assert the primacy of social well-being is the desire to legitimize and authorize Federal actions that now fail to carry under prevailing, basically market, standards. Traditionally our view of government has been that it should undertake only those actions that cannot be performed economically and efficiently by the private sector. This implies that legitimate

governmental operations are confined to those that are dis-economical by market standards. It is a testimony to the prevalence (I am tempted to say "virulence") of those standards that we now find them applied where they do not belong--to governmental actions. Nobody wants to see the public purse squandered (except in his own private interest); everybody wants the most economical and efficient use of limited planning resources. But the misapplication of market rationality to the public household stringently limits planning options and initiatives.

The irrationality of existing decision rules is nowhere more apparent than in regard to Principles and Standards. Here we find the peculiar situation of "two objectives, four accounts." Of what account are those other two accounts, "regional development (RD and SWB? What weight in the decision process are they supposed to carry? As matters presently stand, we are invited to examine the social consequences of Federal actions without regard to their causes. We may mitigate adverse effects (or then again, we may not) but must not induce beneficial ones--except as those can be subsumed under market-valued criteria, e.g. the economic benefits of recreation opportunity.

*Ideally, I would conceive only three accounts, NED, EQ, and SWB, each occurring on four levels--national, regional, state and local. The existence of RD as a separate account seems largely a question of equity, but that requires an external (national) criterion. If interest comes to rest on Appalachia, for instance, that is because of its regional disparity relative to national standards.

In short, the position I am arguing emphasizes the 'social goods' that can be delivered through public planning and public works. The neighborhood upgrading effects of middle-income housing (DeSalvo 1974) is one case in point. On this view the anticipated payoffs are not for urban water management per se but for the social well-being of urban communities in which it operates. To think otherwise is to invert the relation between means and ends.

Discussion to this point has focused on "social well-being" as a planning objective. The "Straw Man" (later Techcom) research was aimed at devising a planning methodology whereby this goal might be approached, and while their final report (Technical Committee 1974) has been received, it still awaits critical evaluation. This is the "ambitious" program, and doubtless it should be supplemented by other cognate research. A second and complementary level of research is the "modest" program of developing and refining the methodology of social impact assessment. Here it is argued that useful work can be carried on even assuming that "social well-being" remains a category of effect rather than of cause. While the longer-term goal of normative social planning should be pursued, more immediate and legitimate is one considering social concerns in the relation of effects. Progress on this level of analysis would consolidate the knowledge base on which to advance the more ambitious program. What is wanted at this stage then is a concerted and coordinated program of research in social impact assessment. Before outlining that "modest" program, it is necessary to review a number of problems seeming to stand in its way.

4. The analytic problem. Critics have argued that the legislation on which SIA is based is not "analytically sound," and indeed, such legislation generally prescribes an ill-defined procedure for analyzing social impacts without ever addressing substantive issues. Agency guidance has been correspondingly vague, and often promulgated without serious feasibility testing. Any decent professional standards of adequacy must contribute to solving the analytic problem of SIA. At a minimum this means the problem of knowledge must be seen as a whole and be seen in context. Holistically, the analytic problem is one of mutual causal relations, with social factors standing as causes as well as effects. It is highly interactive, in the sense that responsiveness to change becomes a causal factor in tracing out higher-order consequences. Contextually, SIA can be said to occur on levels of policy, program and project impact. Analysis proper to one is frequently misdirected towards another, although the three are (or ought to be) closely interrelated. A good example of this is the case of Locks & Dam 26, where what was really at issue was a question of national transportation policy--not a local replacement project whose local effects were practically negligible.

If the analytic situation of SIA is fraught with complexity, however, counsels of perfection--perfect knowledge, perfect consensus, and so on--are definitely misplaced. If SIA is to become an operational planning methodology it must be made workable. An incremental strategy of inquiry is perhaps the only one

supportable at present levels of study effort. The implication of this is that substantial basic research is required outside the operational context of mission-oriented agencies such as the Corps. Orders of magnitude improvements in the state of the art are required for developing the methodology of SIA. Presently we have arrived at a stage of methodological inventorying; beyond that lie codification and translation to actual user needs. Systematic work on these lines is barely discernible, even to the extent of fully assimilating methodological developments in causal modeling, social indicators, cross-impact analysis, etc. already extant. Equally, the problem of science-building in this area implies the cumulation of social science knowledge, its fast retrieval and flexible deployment. The intellectual and institutional apparatus to support these operations are nowhere in existence.

A subset of the analytic problem of SIA may be termed the "predictive problem." Unlike evaluation research, which gauges the effect of functioning programs, the analytic requirement for SIA is anticipatory research. Its purpose is to predict and evaluate the social effects of a policy, program or project while it is still in the planning stage before those effects have occurred. In reference to public planning, the trick is to make decisions that will look good in 50 or 100 years, allowing for shifts in the evaluative criteria by which those decisions will be adjudged. Hence the prediction of value change is an integral part of SIA and the relevance of futures research should be obvious.

5. The problem of integration. If the problem of social knowledge SIA must address is practically coextensive with that of social science as a whole, its true proportions can be grasped only in conjunction with those of economic and environmental impact assessment. Together, they comprise a generic "effect--assessment" process in which questions of resource conservation and development, environmental preservation and enhancement, and social progress and equity must be balanced. The methodological integration of effect assessment--economic, social and environmental --is a fundamental "state of the art" problem both for academic social science and pragmatic societal guidance..

Here is an analytic problem of fundamental importance to a number of disciplines and professions, one which expresses an urgent "need to know" on the part of operating agencies as well. It involves a generalization of economic analysis to internalize the "externalities" of social cost by means of marginal utility theory, input-output modeling and benefit-cost analysis. At the most general level, it implies a solution to the long-standing quest for a general welfare function. It involves a broadening of environmental impact assessment methodologies to encompass significant features of the human environment. It further involves application of decision theory in an effort to "compare incommensurables" within a framework of multiobjective planning. It calls for a "socialization" of the methodology of technology assessment and for the methodological integration of all these in a general planning methodology.

Foremost among the methodological innovations required is a unified analytic framework for combining interdisciplinary approaches and a comprehensive accounting scheme for "comparing incommensurables." Attempts at extending the present boundaries of benefit-cost analysis or enlarging a PPBS framework have grossly underachieved these aims. While the ultimate solution will approximate the general utility function long sought by welfare economists, some partial solutions appear possible in the generalization of input-output modeling, in decision theoretic applications such as multiple-attribute utility theory (MAUT), in energetics and elsewhere. SIA must actively participate in these methodological approaches, whereas today we find it thoroughly submerged in hyphenated appendices that are vastly more economic and environmental than "socio-."

6. The system problem. Just as SIA does not subsist in an intellectual vacuum, neither does it reside in a social one. The "environment" of SIA is densely populated by actors in a maze of overlapping and intersecting systems: the Congressional system, the agency system, the legal system, the professional system, the consulting system and the planning system, to mention only the most prominent among them. The basic question here is how to institute the "SIA system" as a working part in this total systemic context.

For example, a frequent complaint is that SIA is mainly a rationalization for project justification after key planning decisions have been already made. To counteract this unfortunate tendency, so the argument runs, SIA must be moved forward in the planning process so as to influence problem identification and the formulation of alternative plans. Conversely, at the end of the planning process the need is for validation studies of social predictions and for reassessments of social impact situations that continue to change as longer-run and higher-order effects are experienced. The logical conclusion to the SIA process would be a system of continuous monitoring as a permanent fixture in long-range comprehensive planning information systems.

Along with the institutionalization of SIA in the planning process goes a related question of professionalization. Acquiring competence in SIA means some reorientation of professional attitudes towards applied social science and personal adjustments to work situations and working conditions that are far from professionally ideal. The typical SIA study is one of short duration, meager funding and low priority. A "conscientious withdrawal of efficiency" (as Veblen phrased it) would not be surprising under the circumstances and has occurred in some instances, leaving open the question of who, if not reputable professionals, will perform these needed studies. One distressing answer is subprofessionals, and indeed there is some evidence for staffing being done on these depressed levels. Sociological technicians can play a vital supporting role in assessment team activities, but hardly the lead.

Not only do professional attitudes need adjusting to the reality situation of SIA; that situation must itself be adjusted towards accommodating more fully professional standards of competence and excellence. The overriding standard of SIA practice should be no different--and no less--than in comparable assessments of economic and environmental impacts. Nothing less should be asked; nothing less will suffice.

I have directed my remarks towards clarifying the general situation affecting SIA as regards goal structures and research settings in the belief that getting the right answers depends crucially on getting the questions right. If any single conclusion emerges, it is that the problem of SIA must be engaged on a broad front and in concert with others in the planning situation. Solving the analytic problem of SIA entails the creation of a social process as well as the generation of analytic systems. A major reason why the problem of knowledge remains intractable is that we have scarcely begun working through this process. More generally, the Federal interest in SIA has been faint and the Federal investment, slight. On this research topic as on others, a system of "research-by-objectives" seems imperative. It implies, among other things, the fuller institutionalization of SIA in scientific research and professional practice. If we concede a clear and present "need to know" in this area, then it follows we require a heavier concentration of resources and a higher density of activity to solve the analytic problem of SIA.

ENVIRONMENTAL IMPACT ASSESSMENT

Without question, the major impetus to SIA has been passage of the National Environmental Policy Act of 1969 (NEPA). As practiced to date, environmental impact assessment under NEPA has slighted a critical "human" dimension. The following pages explore possibilities for "socializing" this vital center of SIA.

The Humanistic Coefficient

Environmental impact assessment is nothing if it is not an effort to engage the human--that is, social--consequences of environmental modifications. Those consequences are themselves the products of actions by human agents. As Harvey (1972: 325) observes, "The sensibilities of mankind cannot remain permanently immune from the environmental changes man is bringing about through his own actions. It is, therefore, salutary to remind ourselves occasionally that 'the long-range question' is not so much what sort of environment we want, but what sort of man we want."¹ That social impacts are what are really at stake in environmental impact assessment is cogently argued by Pattison (1974: 4):

Any assessment of environmental impact--to be meaningful--must necessarily be built upon assumptions as to public attitudes as well as on technical findings. Our benchmarks for clean air, clean water, or clean streets have less to do with a definable "degree above zero" than with what various members of the public consider acceptable or attainable. No matter how accurately the probability and magnitude of, say, certain fish kills are quantified, the impact of such kills is essentially subjective, loaded with emotional factors not amenable to cost-value analysis. It is the impact of a particular set of findings or predictions on the minds of men--not the impact of the pollutant on the environment per se--that is our key unknown.

Thus it would appear that those responsible for environmental impact studies really should begin with attitude measurement in the affected communities. This might well call for a scientific opinion profile of a representative sample of citizenry to determine their levels of concern for changes in the environment, good or bad, from the standpoints of health, economics, recreation and aesthetics.

Only with such a public opinion study at hand can the significant impact of probable environmental changes be forecast. . . . Without such an analysis to set a baseline for an impact study, the findings of scientists and engineers will never satisfy the ecologists, the anti-ecologists, or the folks who pay the bills.

¹The quote is from Robert Sommer. Similarly, The New York Times of 17 April 1972 quotes a congressman, "I like wildlife and fish life and animal life, but mainly the environment exists for human life, and we are improving the environment for human life."

The social definition of environmental quality underscores a reciprocity of human environment and human experience. It is the social environment which is our experience and expression. Environment is the carrier of human value; it is shaped to human purpose. "Environmental quality" must therefore resolve to "quality of the human environment." Correspondingly, the aim and achievement of environmental planning and management must be to enlarge and enhance the quality of life. A good deal of the intellectual work required of social scientists at this point is to effectively formulate these "quality of life" criteria and to accurately gauge their indicators. Both are needed, to deepen conceptual meaning and refine operational measurement. NEPA affords the operational context in which this social knowledge and social research can make a positive connection. The environmental impact assessment process it establishes is a powerful social technology for regulating the human causes and consequences of environmental modification.

The Social Orientation of NEPA

The social orientation of NEPA is found in its stated purpose to "encourage productive and enjoyable harmony between man and his environment and stimulate the health and welfare of man. . . ." NEPA further recognizes "the profound impact of man's activity on the interrelations of all components of the natural environments" and prescribes the use of "all practicable means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of Americans." The means and measures cited, including those "which will insure that presently unquantified environmental amenities and values may be given appropriate consideration," entail an interdisciplinary approach "to insure the integrated use of natural and social sciences . . . in decision-making which may have an impact on man's environment." While distinctively "social" impacts have tended to be implicit, indirect, and qualitative under these provisions, recent administrative regulations and legal interpretations have broadened and deepened the social concerns admissible and the social content required under NEPA (Savatsky 1974; Francis 1974). Three main provisions in NEPA seem especially pertinent to socially oriented impact assessment: (1) designation of the "human environment," (2) "interdisciplinary approaches" and (3) "indirect effects."

(1) A broadened concept of "environment" which encompasses its human dimension enters into official definitions, e.g. "The environment in this case includes both the natural environment and the social and economic environment" (Department of Agriculture 1973: 31937). More broadly still, "Environment is not defined in NEPA or in the CEQ Guidelines. However, it is clear from Section 102 to the Act and elsewhere that the term is meant to be interpreted broadly to include physical, social, cultural, and aesthetic dimensions."

¹ (Department of Housing and Urban Development 1973: 19183). "Examples of environmental considerations are: air and water quality, erosion control, natural hazards, land use planning, site selection and design, subdivision development, conservation of flora and fauna, urban congestion, overcrowding, displacement and relocation resulting from public or private action or natural disaster, noise pollution, urban blight, code violations and building abandonment, urban sprawl, urban growth policy, preservation of cultural resources, including properties on the National Register of Historic Places, urban design and the quality of the built environment, the impact of the environment on people and their activities."

The Department of Housing and Urban Development (1973: 19183) outlines "existing social environment" in these categories:

- a. Community facilities and services. Description (general description, location, responsible body, relation of capacity to existing demand) of school, park, recreational and cultural, police and fire and health facilities servicing the site and area.
- b. Employment centers and commercial facilities servicing the site and area.
- c. Character of community. Socioeconomic and racial characteristics.
- d. Other. Not included in above categories.

(2) For the first time, NEPA has provided an effective means for enforcing standards of environmental quality across traditional boundaries of political jurisdiction, agency operation and disciplinary affiliation. But increasingly, Federal enactments and agency procedures call for the assessment of the economic, social and environmental impacts of public policies, programs and projects. This overall "effect assessment" process is intended to make possible the rational choice among means for achieving multiple goals. It is aimed at creating an analytic framework of comprehensive and multiobjective planning. As in NEPA, interdisciplinary collaboration between natural and social scientists is implied as a condition for performing this operation. The methodological integration of assessment procedures is a major challenge to economists, social scientists and environmentalists alike.

(3) A further point of entry for social impact assessment concerns the assessment of "indirect" or "secondary impacts." "Primary impacts" are defined as "those that can be attributed directly to the proposed action" (Environmental Protection Agency 1975: 27). CEQ guidelines (1972: 12) require that "Secondary or indirect, as well as primary or direct, consequences for the environment should be included in the analysis."

Many major Federal actions, in particular those that involve the construction or licensing of infrastructure investments (e.g., highways, airports, sewer systems, water resource projects, etc.), stimulate or induce secondary effects in the form of associated investments and changed patterns of social and economic activities, or through changes in natural conditions, may often be even more substantial than the primary effects of the original action itself. For example, the effects of the proposed action on population and growth may be among the more significant secondary effects. Such population and growth impacts should be estimated if expected to be significant . . . and an assessment made of the effect of any possible changes in population patterns or growth upon the resource base, including land use, water, and public services, of the area in question.

Similarly, EPA (1975: 27) defines "secondary impacts" as indirect or induced changes; "If the action involves the construction of a facility, the secondary impacts would include the environmental impacts related to: (i) induced changes in the pattern of land use, population density and related effects on air and water quality or other natural resources; (ii) increased growth at a faster rate than planning for or above the total level planned by the existing community." While the secondary impacts are referred to as environmental impacts incident to changes in land use, population density and growth, usually they are construed as socioeconomic effects (e.g. Soil Conservation Service 1973: 31913).

For example, DOA (1973: 31926) prescribes that "the implications, if any, of the action on population distribution or concentration should be objectively estimated and an assessment made of the probable effects of such changes in population patterns upon the resource bases, including land use, and public services of the area in question. Include also, economic impacts on employment, unemployment, changes in local culture, social and other economic factors."

Social Impact Assessment under NEPA

We have seen that there is some kind of charter, if not an outright "mandate," under NEPA to examine and anticipate social impacts. Occasionally this is embodied in agency regulations, e.g. "Identify, analyze, and discuss the full range of social, physical, and biological factors which change as a result of direct or indirect effects of the proposal" (Department of Agriculture 1973: 31926); "Both long- and short-range implications of a proposed action to man, his physical and social surroundings, and to nature are to be evaluated . . . the degree of public interest, potential controversy, urban or rural setting, and economic and social impacts should be assessed" (Soil Conservation Service 1973: 31910, 31912); "The environmental impact statement process should be used to explore alternative actions that will avoid or minimize adverse impacts and to evaluate both the long and short term implications to man, his physical and social surroundings and to nature" (Department of Transportation 1973: 30216).. The latter spells out social impact assessment in some considerable detail (pp. 30224-25):

Impacts of the proposed action on the human environment involving community disruption and relocation. (1) The statement should include a description of probable impact sufficient to enable an understanding of the extent of the environmental and social impact of the project alternatives and to consider whether relocation problems can be properly handled. This would include the following information obtainable by visual inspection of the proposed affected area and from secondary sources and community sources when available.

(a) An estimate of the households to be displaced including the family characteristics (e.g., minorities and income levels, tenure, the elderly, large families).

(b) Impact on the human environment of an action which divides or disrupts an established community, including, where pertinent, the effect of displacement on types of families and individuals affected, effect of streets cut off, separation of residences from community facilities, separation of residential areas.

(c) Impact on the neighborhood and housing to which relocation is likely to take place (e.g., lack of sufficient housing for large families, doubling up).

(d) An estimate of the businesses to be displaced, and the general effect of business dislocation on the economy of the community.

(e) A definition of relocation housing in the area and the ability to provide adequate relocation housing for the types of families to be displaced.

Other social impacts. The general social groups specially benefitted or harmed by the proposed action should be identified in the statement, including the following:

(1) Particular effects of a proposal on the elderly, handicapped, non-drivers, transit dependent, or minorities should be described to the extent reasonably practicable.

(2) How the proposal will facilitate or inhibit their access to jobs, educational facilities, religious institutions, health and welfare services, recreational facilities, social and cultural facilities, pedestrian movement facilities, and public transit services.

Judicial reviews have developed some legal precedent for considering social impact assessment under NEPA. *Chelsea Neighborhood Associations v. U. S. Postal Service* (7 ERC 1707) found NEPA not satisfied by an EIS on a proposed Vehicle Maintenance Facility that did not adequately consider housing aspects. *Tierrasanta Community Council v. Richardson* (6 ERC 1065) considered the EIS "did not adequately consider the psychological and sociological effects of the proposed youth facility on families residing in the community adjoining the proposed facility, surrounding property values, the character of the adjoining residential neighborhoods, or the education of elementary school children attending a school adjacent to the facility."

The ecological effect of the proposed federal youth facility in the Elliott Community is not significant, but the effect of a youth facility on the human environment in a planned residential area in close proximity to a proposed elementary school site is so significant that an agency decision to the contrary is so questionable as to render it arbitrary and capricious.

In *Scherr v. Volpe* (4 ERC 1435) it is held that "Through the enactment of these procedural requirements the Congress has not only permitted but has compelled the responsible federal agencies to take environmental values into account. . . . Not only must the environmental consequences of a particular action be considered, but Section 102 requires also that these consequences be weighed and balanced against other considerations, such as financial or social, which may be involved." *Hanley v. Mitchell* (4 ERC 1152) and *Lathan v. Volpe* (4 ERC 1487) both required demographic effects be assessed where the proposed project could reasonably be projected to impact significantly on local populations. On the other hand, *Life of the Land v. Brinegar* found no parallel in plaintiffs' claim that runway extension would cause an increase in tourists becoming permanent residents detrimental to the "quality of life" in Honolulu, and in *Nucleus of Chicago Homeowners v. Lynn* (6 ERC 1094) Justice Hoffman turned back residents' efforts to prevent the construction of low income housing in their neighborhood with the observation that

Prognosticating human behavior and analyzing its consequences on the environment is an especially difficult, if not impossible task. Sociology, a discipline attempting such prediction, has not yet attained the stage of an exact science. By its very nature, it relies upon general conclusions drawn from average propositions based on sample data. The different expert conclusions that may be drawn from the same data is evident not only in the evidence before this court, but in the literature of the social sciences. As such, these conclusions are not very persuasive in a court of law.

More specifically,

It is the court's conclusion that the evidence does not support the proposition that prospective tenants of public housing will significantly affect the environment. The evidence does not support the allegation in the complaint of differing socio-economic characteristics of the plaintiffs as contrasted with prospective tenants of public housing. There is no evidence to support the plaintiffs' allegations that prospective tenants of public housing are more likely to engage in anti-social conduct than present community residents. Indeed, there is little, if any, evidence of the social characteristics of the individual plaintiffs, none having testified. Thus the proposed construction of the housing units will not significantly affect the environment and the defendants' action in filing a negative impact statement was not in violation of the National Environmental Protection (sic) Act.

As to the actual social science content of EISs, Friesema and Culhane (1974: 4-5) make the following points:

1. The most likely social impacts to be discussed in any EIS are the economic benefits to be derived from the project, or a calculation of demand or need for such a project. The modal economic "justification" is an unelaborated statement that the project or proposal will lead to some kind of increased economic activity; since the statement is unelaborated, one can often infer that the statement represents an assumption, rather than the result of rational evaluation.

Needless to say, we view calculations concerning social impacts which are presented without reference to the ways in which they were derived, as being of little use.

2. Of course, for most of the social impacts which are identified in environmental impact statements, there is no real calculation of impact to either use or attack.
3. While impact statements will occasionally discuss and propose ameliorative or mitigative strategies to reduce the negative impacts upon wildlife, parkland, air and water quality, or aesthetics, which would otherwise accompany a project, we know of virtually no detailed plan or programs, considered in EIS's, to ameliorate or mitigate the negative social impacts which may accompany a project.
4. The analysis of social impacts in EIS's is likely to be devoid of recognizable theory. Nor is there, in our experience, any reasonable review of the social science literature applicable to anticipating the impacts of a project.
5. There is usually little, if any, primary social research conducted in preparing EIS's on programs where major social impacts are likely. In contrast, it is common to find natural science studies reported in EIS's which were conducted in preparing the EIS, or were directly related to the proposal or project.

6. Certain important social impacts of major federal actions are largely taboo subjects for public documents such as EIS's, even though they may be important considerations in agency decision-making. These would include certain political consideration, and often any measures of differential social impacts among status, class or cultural groups.
7. All the social science which appears in an EIS is marshalled as project justification, as if the EIS were an advocacy statement, and operates within the basic assumption that the project (or a very similar, acceptable alternative) is surely desirable.

They conclude, "in view of the wide and expanding range of 'major federal actions' for which environmental impact statements are prepared, which seem likely to have significant social impacts, the social consequences which are actually considered and discussed in EIS's are very limited and narrow" (p. 4). In accounting for this paucity of social science content, Friesema and Culhane (1974: 6) advance four reasons:

1. The EIS process, by law and common understanding, gives higher weight to impacts on air, water, land, and ecological systems than to social impacts. The emphasis is, and will continue to be upon evaluating impacts on the natural environment. While some of us may look wishfully at the statutory language discussing the "human environment," the CEQ guidelines, agency regulations implementing NEPA, and the settled law of NEPA suggest that evaluations of social impacts are likely to continue to be add-ons in the EIS process.
2. The background and inclination of agency decision-makers, their staffs, agency EIS writers, and even the consultant groups are not in the social sciences, but in the natural sciences. These people are frequently unaware and unappreciative of systematic social science.
3. Agencies value and need to preserve myths that their activities serve an undifferentiated public interest. Thus it would be pure political dynamite for them to publicly debate the merits of providing some positive values to some groups, at the expense of other groups. We can anticipate that many of the most consequential social impacts of major government actions will continue to be undefined or only fuzzily alluded to, in EIS's.
4. For many of the anticipated social impacts of major projects, there are serious epistemological or other research complexities which make it difficult or impossible for social scientists to give very precise or useable predictions of social consequences.

The Methodology of Social Impact Assessment

This last point leads directly to the chief impediment to instituting and implementing a systematic procedure of social impact assessment: operational methodology. Social impacts might be more heavily weighted, agency personnel less grudging and more responsive to differential impact assessment were social

scientists more dexterous and adept in practicing the art of social impact assessment. While it is problematic as to what is cause and what effect (just as in the analytic situation of SIA itself), that seems a reasonable hypothesis for working toward the desired result. At the same time, generalization of existing assessment methodologies for economic and environmental impacts can greatly facilitate the "state of the art" improvements needed. While results to date have been meager,¹ some lines of methodological development such as input-output modeling (Isard and others 1969) appear to hold promise. Mainly though it will be a matter of self-help, and here again some appreciable progress can be noted (Finsterbusch and Wolf 1976). In any case the overriding criterion must be the level of scientific quality expected and demanded on the environmental side of EIS preparation. Nothing less should be asked; nothing less will suffice.

¹For a representative sampling of environmental impact assessment methodologies see Warner and Preston (1974). A disappointing attempt to generalize on EES (Environmental Evaluation System) methodology (Dee and others 1973) is reported in Baker, Dee and Finley (1974).

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NEPA, Sociologists and Succession: A Position Paper

by

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The Ad Hoc Committee on Environmental Sociology, like the rest of our profession (and even most of the rest of our species) has permitted itself to remain myopic in its response to the situation now confronting humanity. Yet it is from this situation that our mandate arose.

The mandate of this committee was stated in a resolution passed by the 1973 S.A. business meeting and subsequently approved by the Council. It was conveyed to us in the Executive Officer's letter inviting us to serve as committee members. We were instructed "to develop guidelines for sociological contributions to environmental impact statements."

Environmental impact statements are required by law to be included in "every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment..." In all our correspondence and discussions to date, it seems to me we as a committee have overlooked the very issue that would tend to generate the most fundamental guideline of all. In Part I of this paper I mean to show why we must question the connotations of the word "impact" as used in the National Environmental Policy Act of 1969 (NEPA) and in discussions, documents, and actions consequent thereto. In Part II, I will go on to show what can be learned from examining the most valiant effort so far made by many governments to curb manmade environmental change. Finally, in Part III, I will suggest the nature of the distinctively sociological inputs called for by these considerations.

I. Succession: Reaction Rather Than Impact

According to my dictionary, the noun "impact" is defined as "1. a striking together; violent contact; collision. 2. the force of a collision; shock." According to my pocket thesaurus, the word "impact" is associated with such approximate synonyms as "clash, collision, encounter, shock, brunt, crash, bump," and with "charge, onset; percussion, concussion." In neither reference source does there appear to be any connotation of sustained, long-term, indirect, ramified, latent, incipient or insidious effect.

Thus, by acquiescing in the use of the word "impact", this committee seems to have joined the authors of NEPA in assuming (presumably no less unwittingly than uncritically) that the environmental and social side-effects of purposive federal projects are inherently short-term and direct. Moreover, we have implicitly accepted the unstated premise that the "impact" of a proposed project or policy can be assessed by reference to particularized environmental contexts and segments of our society, without regard for global trends or the comprehensive situation of our species now and tomorrow.

Instead, I submit, the beginning of wisdom in the modern world consists of recognition that a human-dominated biosphere is inexorably undergoing a process of global succession. Actions and public policies whose unwanted

side-effects would have been negligible in the context of low density population using nineteenth century technology have lost their disregardability precisely because the density of population and the power of technology have increased so much.

"Succession" is a word that has been used too superficially in sociological literature. An essential component of succession is the effect of organisms upon their habitat; ecologists call this effect "reaction" (Clements, 1916: 79-80). Sociologists misconstrued the concept of reaction right from the start; e.g., Burgess (1928: 112) wrongly took the word to mean resistance to invasion. What ecologists mean by this term is more nearly what we should have had in mind when we got into the unfortunate habit of referring to environmental side-effects of human actions by the inadequate label "impact." Reaction refers to the fact that any population of organisms inevitably produces changes in its habitat by the very process of using it. This modifying effect of organisms upon habitat, unless offset by opposite reactions from other kinds of organisms, must eventually diminish the habitat's carrying capacity for the particular species or association producing the change. Reaction is not only unintentional, it is cumulative. It may be gradual and synergistic. "Impact" connotes none of these attributes.

The significance of reaction as a component process in succession can be understood by contrasting succession with its absence. Succession is absent from a "climax community" (Kormondy, 1969: 158-9). A climax community comprises a combination of species that can successfully outcompete any alternative combination that might otherwise exist in its place. A climax community can only exist when the assortment of niches within the community is such that the environmental effects of their occupants are mutually complementary and the population in each niche is kept stable as a result of influences upon each population by other populations in the other niches. The climax community is an integrated and self-perpetuating community, equilibrated in various ways. In it, for example, the organic fixation of carbon by photosynthesis (what ecologists mean by "production") is in balance with the return of oxidized carbon to the atmosphere by "respiration."

Most communities are not climax communities. They undergo continual change wherein one species is progressively replaced by another. Even more emphatically, most human communities (at least in the modern world) cannot be climax communities. Certainly in modern urban-industrial societies photosynthetic production does not match total respiration (augmented by combustion of fossil fuels). As a creator and user of technology, man's efforts to do the very things for which his species has special aptitudes have the inescapable effect of fostering this imbalance. Human ascendancy thus undermines itself.

But dominance has been self-terminating in various associations of non-human species, too. NEPA has made reaction (alias "impact") seem more unprecedented and strictly human than it really is. An orderly and directional process of community transformation results from modification of the habitat by the biotic community that exists in it at a given time. As the habitat changes, the association of plants and animals it will support must change. Succession is the process of change from one community type to another, and some sociologists have recognized it as such (Park, 1936; Park and Burgess, 1921: 554; Mukerjee, 1932).

A minimal form of succession happens when a more effectively adapted species replaces a competitor that is less effectively adapted to the same niche. A more drastic form of succession happens when, as a habitat undergoes change due to its use by its occupants it becomes less suitable for some types of organisms that once prospered in it, and they are progressively replaced by other types better adapted to the changed conditions wrought by their predecessors.

Sociologists have neglected the more drastic form of succession. Insofar as the interests of sociologists have turned toward processes they have labeled succession, their concern has been for such examples as the displacement of one ethnic group by another in some neighborhood of a city or in an occupational stratum (Cressey, 1938; Hollingshead, 1938; Lind, 1938). Important as the social repercussions may be, and traumatic as the experience may be for some of the individuals involved in the process, this represents the minor form of succession. The more comprehensive form is a process that can now be recognized in human experience on a global scale, as, for example, supertanker traffic is helping destroy the world's fisheries.

The entire sequence of community types characteristic of a given site is what ecologists call a "sere", and the developmental steps in this process of community succession are "seral stages" (Odum, 1971: 251). The key idea involving this cluster of concepts is that most biotic communities are subject to change because they do change the characteristics of their own environments. Succession is a very common (and virtually inescapable) ecological process. It happens to human communities as well as to animal communities and plant communities (Clements, 1916: 3).

Man has imagined himself to be more unlike other mammals than he really is. In the twentieth century, man's response to his own increasing numbers closely paralleled the response patterns typical of other mammal species (Russell and Russell, 1968). Mankind is part of the animal kingdom. The human species is as dependent as the rest of the animal kingdom upon the plant kingdom (Sears, 1957). As human numbers have increased, an increasing fraction of the plant kingdom's total productivity has been diverted from feeding other animals to feeding man or the animals man uses. One ecologist has estimated this fraction as one-eighth of the net production of all the world's land areas, and this does not include man's use of vegetable fibers, timber, etc. (Odum, 1971: 55). Thus, with only three more doublings of his numbers, man and his domestic animals would be consuming everything else that grows on all the continents and all the islands of the world, and eating it all just as fast as it could be grown and harvested.

Since man began to shift from hunting and gathering to agriculture, some 10,000 years ago, he has appreciably altered the structure of the worldwide web of life. He has tremendously increased the fraction of that web that consists of human flesh, and the fraction of it that consists of other organisms he consumes. In only about 400 human generations -- a short time in an evolutionary perspective -- the human population has doubled nine or ten times. Nine doublings amounts to a huge increase, for $2^9 = 512$. Since the dawn of agriculture, the world's human population has thus increased at least five-hundredfold and possibly a thousandfold. Together with enormous technological progress such growth in human numbers implies immensely magnified power of human activities to produce additional changes in the Biosphere and its geochemical substrate.

Worldwide, as human numbers continue to increase, the effort to divert to human use still larger fractions of the annual produce of photosynthesis becomes more and more unavoidable. Yet, obviously, the least difficult diversions must generally have been the first to be achieved. So, as the fraction already diverted to human use becomes larger, the difficulty of diverting still more to human use becomes greater, and reaction upon the environment becomes more severe.

From the early nineteenth century onwards, new tools and new techniques gave man increased power to outcompete other members of the animal kingdom in consuming the products of the plant kingdom's life processes. Accordingly, human numbers increased more rapidly than ever; two of those nine or ten doublings during the 100 centuries since the dawn of agriculture occurred in the one and a half centuries since mechanized agriculture began becoming the dominant mode of sustenance production.

Notable events of the twentieth century have simply accelerated a fate that began to overtake mankind about eight centuries ago. It was about that long ago that our species commenced using any appreciable quantity of fossil fuel (stored left-overs from photosynthesis in the Carboniferous era). The postwar population explosion and the explosive increase of technology have been only the most recent means of that acceleration. We all naively welcomed the technology, oblivious of its reactive effects, and when the term "population explosion" became common, it was too often taken to signify only a short-term occurrence, merely a bothersome part of the legacy of World War II. It is important to recognize that the exponential increase of human numbers was not nearly that recent. The increase in the world's human population by five-hundredfold (or more) since Neolithic times has foreclosed many options. Preoccupation with just the most recent doubling of world population tends to obscure the fact that even if a growth rate of zero were somehow achieved soon, the planet is already inhabited by many more people than it was able to support in its pre-manmade condition.

Until about eight hundred years ago, human communities had relied almost entirely on organic sources of energy -- plant fuels and animal muscle power -- supplemented very modestly by the energy of moving air and flowing water (Hubbert, 1969: 158). All of these energy sources were self-renewing. Man was thus living within the earth's current income of solar energy -- not from wisdom but from ignorance of the buried treasure yet to be discovered. His activities were almost entirely fueled by a small part of the organic materials produced each growing season. These materials absorbed by photosynthesis only a small fraction of the unending inflow of solar energy.

When the buried treasure began to be found (and its utility recognized), man committed himself to the fatal error of supposing that his life could thenceforth be lived on a scale and at a pace commensurate with the rate at which treasure was discovered and unearthed. No regard for its total quantity, or for the rate at which natural processes might be replenishing it, seemed necessary.

Shortsighted Homo sapiens took no notice of the fact that in building lifestyles based on combustion of coal (and later petroleum) he was beginning to live on the earth's savings deposits. By withdrawing these savings he could live; for

a while, on a grander scale. The rate of withdrawal was misperceived as a rise in income. This abysmal misunderstanding of what was actually being done was epitomized by a legal anomaly, the oil depletion allowance. This venerable loophole in the corporate income tax laws of the United States permitted so-called oil "producers" to offset their taxable revenues by a generous percentage on the pretext that their earnings reflected depletion of "their" crude oil reserves. The tax write-off was rationalized as an incentive to "production," but it was equivalent to paying someone interest on the rate of withdrawal of savings rather than on the principal left in the bank.

Nature's deposits were vast, but not inexhaustible. As man developed the technology that increased his ability to withdraw and spend those savings, he increased dramatically the quantity of energy per capita per year available to do useful tasks. Eventually this increase led to reduced manpower requirements in agriculture. It also led to the development of many new occupational niches for increasingly diversified human beings (Cottrell, 1955: 148-64). The new niches depend on continuing to withdraw and spend the earth's savings. When the withdrawable savings are gone, the niches will inevitably collapse. The social ramifications of the partial collapse that is already resulting from depletion of the most readily withdrawable deposits are unpleasant to contemplate. But it should be the business of this committee to point out that the Great Depression was a mild preview.

One thing that kept mankind from seeing all this, and enabled our species to rush exuberantly into occupying niches that had to be temporary, was our ability to give ideological legitimation to occupations that made no sense ecologically. In America, under both major political parties, the military-industrial complex helped obscure the fact that population was expanding to fill niches that could not be permanent because they were founded upon the use of prehistoric (and exhaustible) ghost acreage (Borgstrom, 1965; Catton, 1974). As temporary niches proliferated, population increased to fill them. As population grew, the rate of withdrawal of savings also grew. Moreover, the growing technology gave man increased access to other deposits -- mineral materials as well as stored energy. These offered enormous (but again temporary) advantages over organic (and thus renewable) materials.

If we are to understand what is now happening to us and to the world, we must learn to see that process as a crescendo of human prodigality. The human family, even if it were soon to stop growing, has committed itself to living beyond its means (Borgstrom, 1969). As long as the savings have held out, we have really been able to live it up! But the higher the rate of expenditure to which we have accustomed ourselves, the sterner the readjustment resource depletion will require.

Misled by the temporary advantages of prodigality, we allowed the human family to multiply so much that by now just three more doublings (about what Britain has already experienced in the short time since Malthus) would mean that all the net photosynthetic production on all the continents and all the islands on earth would have to be used for supporting the human community -- whose members would still be living at an abjectly "underdeveloped" level. Such total exploitation of an ecosystem by one dominant species has probably never happened, and is almost surely not possible. For *Homo sapiens*, it seems doubtful that we can safely divert very much more than the already unprecedented fraction of total photosynthesis to our uses.

It should thus be apparent that today's age of overpopulation is more than just the unfortunate aftermath of a memorable age of exuberant expansion into a New World. It is, much more importantly, the ominous prelude to a monumental collapse. Nature must, in the not far distant future, institute bankruptcy proceedings against prodigal Homo sapiens. The imminence of that show-down really was why the United States Congress had to enact legislation such as NEPA. The national policy declared by that law was meant to begin the process of preventing this nation's portion of the only earth we have from being rendered uninhabitable by its human passengers. Its purpose was no less than the arresting of global succession, even if it was rarely understood in such terms. The guidelines formulated by this committee will be of little significance if they fail to point this out.

Mankind's excess numbers and ravenous technology have already brought us to an ecological impasse. But man is not the first species to undergo resource bankruptcy. When yeast cells are introduced into a wine vat, for example, they find their "New World" -- the moist, sugar-laden fruit mash -- abundantly endowed with the resources they need for exuberant growth. But as their population responds to this magnificent circumstances by an "irruption" or "bloom" (population explosion), the accumulation of their own fermentation products makes life increasingly difficult (and miserable, if we permit ourselves to think of their plight anthropomorphically). Eventually, they all die (and, to be anthropomorphic again, the coroner's reports would have to attribute this "crash" or "die-off" to self-made "pollution").

Nature treated European man as man treats the yeast cells, by endowing our New World with abundant but exhaustible resources. Man responded to this circumstance as the yeast cells respond to the conditions in the wine vat. When the earth's deposits of fossil fuels and mineral resources were being laid down, Homo sapiens had not yet been prepared by evolution to take advantage of them. As soon as technology made it possible for mankind to do so, we eagerly (and without foreseeing the ultimate consequences) shifted to a high-energy way of life. We "bloomed", and we must now expect the massive die-off. The crash that typically follows an irruption is a very special (and unpleasant) version of the process of succession. It results from a population's reaction upon its habitat. We must realize that this seral pattern is what we have been experiencing. We delude ourselves when we imagine we can avoid its culmination. Guidelines from this committee ought to correct such delusion.

Even the most sophisticated are prone to reassure themselves by insisting full-scale die-off will not begin in our life time. This is probably an unwarranted assumption but anyway there is an urgent need to begin facing some of irruption's more immediate social implications. Affluent Americans deceived themselves as tragically as they misled the rest of the world by parading their own industrial development as a preview of the future condition of the underdeveloped countries. It would have been more accurate to reverse the picture. The revolution of rising frustrations in underdeveloped countries became an undeniable obstacle to environmental maintenance when expressed vituperatively at the Stockholm Conference in 1972 and still more so in Bucharest and Rome in 1974.

Economists have considered it normal to expect nations to "take off" into sustained economic growth (Hagen, 1962). But the myth that "we did it, so you can do it too" was a cultural export by the political and industrial missionaries

of developed countries that may outweigh in its ultimate cruelty the inhumane consequences of outright exploitation of colonial dependencies. Nations of the so-called Third World began to return that cruelty when their spokesmen used the World Food Conference in Rome as a forum for denouncing the industrial nations, particularly the United States, for allegedly causing famine conditions in the underdeveloped countries. It was one thing to be an underdeveloped nation in the eighteenth century when the world had no developed nations. It is quite another thing today. When the developed nations were still underdeveloped and just approaching their take-off point, European technology was just starting to harness the energy stored in the earth during the past several hundred million years. The sparsely populated New World had only recently been explored and opened for exuberant settlement and exploitation. These conditions which made take-off possible no longer prevail. The underdeveloped countries of Asia, Africa, and Latin America in the twentieth century cannot realistically be expected to follow in the footsteps of the underdeveloped nations of eighteenth century Europe, now developed. Most of today's underdeveloped nations are destined never to take off.

Hard as it is for the people and leaders of underdeveloped countries to face that fact, they are not alone in finding it repugnant. The people and leaders of the affluent societies have also resided believing it (Cottrell, 1955: 110-11). Recognition that the world's poor will mostly stay poor will destroy the comforting conviction of the world's privileged that their good fortune is pardonable because "in time, others will catch up."

Nature's limiting factors will not clear most underdeveloped countries for take-off. Worse yet, if many did somehow take off it would turn out to augment global reaction and hasten the inevitable worldwide crash, now that people are so numerous. Not only are there not enough of the substances a developed human community has to extract from its habitat in the process of living to permit a world of nearly four billion people to be all developed; the capacity of the world's oceans, continents, and atmosphere to absorb the substances a developed human community has to "get rid of" is limited. Even as a waste disposal site, the biosphere is finite.

To this day, we mislead ourselves by using so bland a word as "pollution" for this part of our plight. It is the plight of the yeast cells in the wine vat. Accumulation of the noxious and toxic extrametabolites of high-energy civilization has now become a world problem. Too many people have not yet seen that it would become a world disaster if the benefits of modern industry were bestowed as abundantly upon everyone in the underdeveloped countries as they already have been upon the average inhabitant of the overdeveloped nations.

II. Efforts to Halt Succession: The Test Case

Sociologists wishing to assess the possibilities for minimizing human reactions upon our habitat would be well advised to give close scrutiny to a particular class of governmental actions that have been explicitly intended to avert succession. National parks provide a test case, though sociologists concerned with "more serious" forms of human organization have tended to discount their sociological importance.

National parks have been established in many lands, partly as a result of cultural diffusion from the United States where this extraordinary land-management form was invented. They are dedicated by their respective governments as sanctuaries in which human reaction on the local ecosystem is meant to be held to a minimum. On national park lands, humans as visitors rather than inhabitants partake of special kinds of benefit and enjoyment. National parks afford people edifying and re-creative contacts with more or less primeval nature, exposure to a heritage from which they may derive a special awareness of man's part in the biosphere, and encounters with interpretive displays by which they can pleasantly absorb knowledge of nature's ways.

The national park idea first took institutional form in 1872, when the U. S. Congress passed an "Act of Dedication" establishing Yellowstone National Park. In the national park systems of many countries since then, more than under any other land-use regime, Homo sapiens began consciously evolving the self-restraint that Aldo Leopold (1933) knew was mankind's only alternative to habitat destruction. In 1969, Congressional passage of the National Environmental Policy Act made a start toward generalizing this self-restraint to man's relation to the entire biosphere. Section 2 said the purposes of that Act were:

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation...

But from examining some of mankind's experience with national parks we can see that there is reason to doubt that the measures authorized by NEPA (or any feasible measures) can accomplish so ambitious a purpose as the elimination of human damage to the biosphere.

Most visits to most national parks are recreational in the ordinary sense, but for many visitors these heritage-preserving institutions contain the possibility of illuminating the human condition in a very extraordinary way. In New Zealand's Westland National Park, for example, a perceptive visitor driving up the road toward the retreating terminus of the Fox Glacier may observe, that in the last mile as he emerges from the dense shade of a mature rain forest of rimu and totara into stands of younger and smaller trees, he looks out onto an area of tall gray shrubs, the mountain akeake. Beyond these he finds smaller bushes of native broom and the dark green tutu. Past the area of shrubs, to within perhaps a hundred feet of the glacier, he sees grass and tufts of willow herb, followed by rocks colonized only by mosses and lichens, and at last by rocks too recently uncovered to be colonized at all. Knowing he is still just a few hundred feet above sea level, the visitor may realize that these changes of vegetation type cannot be due to altitude differences but result from the different lengths of time the various parts of the valley have been exposed by the melting glacial ice.

In the park headquarters he can see this same gradient of vegetation types represented in miniature in an eloquent table-top display, accompanied by a succinct and vivid explanation of succession. The area adjacent to the plastic-simulated glacier terminus on this model represents the land most recently

vacated by the melting ice, and most recently colonized (by primitive species of plants able to live on rocks rather than soil). A foot or so from these pioneer plant specimens on the table-top model -- perhaps several hundred feet downstream in the real world -- is an area occupied by other plants that could not take root until the pioneer species had modified the rocks. And so on. The greater the distance downstream from the glacier, the longer the time since the area was uncovered and since soil-building vegetation first began to occupy it. The older the plant community on a given site, the more seral stages it has gone through.

From viewing this exhibit, the visitor can come away with the knowledge that pre-climax life forms cannot avoid enabling their successors to replace them, because they inexorably alter their habitat in the process of using it. Pondering what he has seen, the park visitor may sense the shortsightedness in man's assumption that his own species is exempt from any such process.

In the same year as the Yellowstone centennial, the United Nations was obliged by concern for the condition of our planet to convene the first world Conference on the Human Environment. After a century of experience with national parks, what the people and industries of all nations of the world were still doing to the 99-plus percent of the biosphere outside these enclaves required facing up to the most important national park lesson, namely, that mankind derives important benefits from ecosystems not dominated by man, benefits not available from ecosystems man does dominate.

The conference in Stockholm did not mean that human societies could, should, or ever would make the whole world into a "public park or pleasuring ground", but it did reflect the fact that to protect ourselves from succession we needed somehow to protect our habitat from ourselves.

Homo sapiens was slow to learn that extraction of particular resources from the earth can mean destruction of our ultimately indispensable resource -- a self-renewing world. Within 200 miles of the place where the national park idea was conceived, there had been gouged into the earth by the time of the centennial a huge manmade hole. Its edges were eating into the city it was dug to support. Butte, Montana provides sustenance for its people by undermining itself, extracting and selling metallic ore. The same principle applies more subtly to the whole world.

The 1916 Act creating the National Park Service to administer the several national parks then in existence assigned this new bureau in the Interior Department the task of conserving these specimen ecosystems. The parks were to be managed so as to "provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (Ise, 1961), language copied in the National Park Acts of other nations sharing the same ideal.

Dictionaries give two related meanings for the word "enjoyment". One is inclusive, the other, more specific. The broader meaning of "enjoyment" is "having the use or benefit of something; having as one's lot or advantage". Within this broader meaning the word can be more specifically defined as "getting pleasure from". It is of course this narrower meaning that has been applied to national parks; Yellowstone in 1872 was designated a "pleasuring ground".

The broader definition makes it apparent, though, that the task assigned by Congress in 1916 to the new Park Service was a sample of the task NEPA would belatedly set for all agencies: to enable man to have the use, the benefit, and the advantages of the biosphere in such manner as to leave it unimpaired for future generations to have its use, benefit, and advantages.

This is a large order, perhaps impossible. In the American national parks, as visitor loads increased exponentially, serious problems of overuse raised increasing doubts whether it was possible to "use" any habitat (even, in supposedly non-consuming ways) and still leave it "unimpaired." Human reaction upon even these dedicated lands began to suggest that succession was quite inescapable. Even in the national parks, which embodied an ideal of environmental preservation, realities perpetually threaten that ideal. The wider implications in their problems transcend the realm of recreation.

American Congressmen in 1969 knew too little ecology to realize that when they passed the National Environmental Policy Act they were trying to halt by legislative command the man-caused succession overtaking man.

Could Homo sapiens really suspend succession? The national parks of various nations seemed to provide a test case, shedding light on the future of mankind's world. Of all bureaucratic organizations in the United States, it would be difficult to find one (in or out of government) whose personnel were more unselfishly dedicated to a mission, whose mission was more inspired by altruism, and whose public was more unmercenary in responding to it. Park rangers, park superintendents, and Park Service directors were human and did sometimes err, and park visitors sometimes made inappropriate demands on park resources. But if there was ever going to be an opportunity for mankind to show that use of a habitat could be reconciled with its preservation, the national parks were the optimum context. Yet, by the time of the Yellowstone centennial, the volume of traffic in the park was so great it could be accommodated only by constructing an utterly unprimeval cloverleaf highway interchange adjacent to the visitor area at Old Faithful, an area replete with acres and acres of parking lot pavement.

In Britain there is increasing pressure to devastate by other means such "amenity areas." Scenic characteristics imparted by the ice age to Snowdonia National Park in Wales are threatened by strip mining for metallic ores. British industry must have to make the export goods Britain exchanges for food imports indispensable to sustaining Britons' lives. For many metals the world's richest ores have already been mined and smelted. Leaner ores are thus in increasing demand, even though the leaner the ore used, the greater the volume of rock removed per pound of metal obtained.

Stephen Mather, the founding Director of the National Park Service in America, sought during his administration to elicit widespread public support for park protection policies by encouraging park visitation. He wanted an increasing fraction of the public to have first-hand acquaintance with their collectively owned natural wonders so they would appreciate the need for protecting them. Ultimately, visitor numbers increased beyond Mather's most ambitious expectation, and overuse threatened park values just as undermining threatened Butte. By the 1970's such protective desecrations as the cloverleaf interchange at Old Faithful had become unavoidable. Such planned violations of virgin nature were required to protect this habitat from still greater damage that would have been inflicted by visitor loads left unchanneled.

The severity of visitor pressure on the national parks was not at all what the enthusiastic explorers around the campfire at Madison Junction had had in mind when they opted for a new pattern of self-restraint in human land use. We must therefore face the fact of succession. If even on these dedicated lands, administered in trust by devoted public servants, man could degrade what he meant to preserve, it ought to be evident that a biosphere dominated by Homo sapiens is no climax community. The more of us there are, and the more technological power we have to get from the earth things we need and want, the more we will change the world upon which our lives depend.

III. Avoiding Pretense: Realistic Sociological Input

Die-off will follow irruption. We must hope that the fraction of humanity who survive the crash will have learned better than their forebears that when man began to unearth nature's exhaustible treasures he began to "un-earth" man. It is to such future generations, presumably, that our guidelines may have some meaning.

To sharpen our own insight it may be worth asking, what if the 41st Congress (instead of the 91st) had enacted a National Environmental Policy Act (in 1869 instead of 1969)? What superhuman imagination would the 39 million post-Civil War Americans have needed to be able to decide on our behalf that we would be better served by the environment they were going to bequeath to us if their descendants did not become in a century five times more numerous and twenty times more urbanized? Short of that kind of restraint, what difference would an 1869 NEPA have made?

What if Ferdinand and Isabella had been cautious and had required Christopher Columbus to submit an environmental impact statement (complete with a section on social impact) before they authorized his proposed project of exploration; what could the earnest navigator have foreseen as the consequences to be anticipated from his voyage of discovery? Suppose he had submitted a statement describing an age of exuberant colonization and national expansion, depicting the culture it would foster and the democratic institutions it would nurture. Suppose he had foretold the irruption of Homo sapiens to fill up the carrying capacity surplus in a New World, the legalistic magic and the technological Deus ex Machina by which men in a subsequent age of overpopulation would strive to perpetuate obsolescent ways. Would the explorer's royal patrons have believed such wild ideas? Would they have sought safeguards to minimize the regrettable portions of the project's probable "impact"?

No one ever had that kind of imagination and foresight. Let us therefore avoid pretending that sociologists in the 1970's can, by augmenting in our own special way the pieties implicit in NEPA, repeal laws of nature or exempt our species from succession.

The best we can do, it seems to me, is to suggest that the "social impact" sections of "environmental impact statements" should include informed estimates (or shrewd guesses) of the following:

1. The additional stresses likely to be imposed, or the existing stresses likely to be alleviated, in social institutions formed in an age of surplus carrying capacity (when the New World was still new and underpopulated) and now stressed already by niche saturation.

2. The various forms of collective behavior (e.g., milling, rumoring, covert or overt panic responses, etc.) likely to be engendered by predictable destructuring of people's life-space due to various ramifications of the proposed change of policy or proposed modification of the physical environment.
3. Probable short-term and long-term effects on public attitudes, including:
 - a. The extent to which the project or policy is likely to reinforce or counteract the illusion of limitlessness to which Americans became accustomed as a result of their expansionist history.
 - b. The extent to which the project or policy might lead people to believe an increase in environmental carrying capacity had been achieved, whether such an increase had actually been achieved or not; in case of a real carrying capacity increment, the extent to which it might be perceived as permanent even if in fact it was temporary.
 - c. The extent to which the project or policy may facilitate or impede public recognition of movement into another serial stage by the local, national, or global human community.

These estimates would be ultimately more important than the more routine sociological judgments of the fairly direct effects of a proposed project or policy upon family relations, employment opportunities, social mobility, leisure activities, crime and delinquency, migration, etc.

The shape of the world today requires that assessment of a proposal by experts in engineering, biology, geology, agronomy, chemistry, meteorology, and other sciences must aim at answering the questions: Will it enlarge or diminish the carrying capacity of man's habitat? Will it accelerate or retard the inexorable process of succession?

Social assessment must therefore aim at answering the corollary questions: Will the project or policy promote realistic understanding of the relation between population and carrying capacity? Will it facilitate or obstruct public recognition of global and local succession and man's involvement therein?

Social assessment must also ask whether a project or policy is likely to help Americans adapt to the permanent prevalence of poverty, a condition so contrary to inherited expectations. Will it heighten or soften frustration by enhancing or impeding our comprehension of increasingly rigid inequalities among men and nations? Will it help or hinder our reluctant and disjointed efforts to readjust to living on income rather than savings?

And, for a while, we ought to ask whether any given proposal will assuage or intensify the grief that must befall us as the world undergoes the crash its earlier exuberance has made inevitable.

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REVIEW OF SOCIAL IMPACTS

in the Environmental Impact Statement of the Bureau of Land Management on the
Proposed Federal Coal Leasing Program

for the Environmental Impact Assessment Project
of the Institute of Ecology

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I. General evaluation:

The most striking element of the social impact sections of the EIS is the modest definition of "social." Social impacts are presented in the sections entitled "Land Uses," "Population Patterns and Considerations," and "Human-Value Resources." However, the material under the three rubrics consists chiefly of a few general comments on the conservative orientations of rural populations, the potential impact of social agencies by population increases, and possible conflict between old residents and mining-related new residents.

Missing are any documented studies of the social and cultural systems of the various groups in the areas where mining is proposed and any clear delineation of new mining populations. Just as critical is the lack of analysis of the relationship of disruptions of the eco-system by mining to probable disruptions of the social systems. Changes in land-use, water availability, wildlife habitats, air quality, transportation facilities, and other environmental factors along with long-term degradation and reclamation will all affect those who define and direct their lives together in the area. In turn, the environment is altered by the decisions of those who live as part of it.

The comments here are selected to represent the kinds of questions that ought to be addressed in a coal-related EIS. They will be restricted to the Northern Great Plains and Rocky Mountain Provinces where the largest accessible reserves are found.

An outline of the assessment of probable social impacts of mining or other traumatic environmental intervention can be developed in a three-part progression:

- I. Analysis of the present social systems including --
 - A. An historical perspective of ongoing change in the social relationships, trends, past impacts, and projections for a future without mining intervention.
 - B. Definitions of self and society among all groups in the social system. Decision-makers, representatives of constituencies including youth and women, and those marginal to the communities should be included with major economic segments in an examination of the bases of life-shaping decisions.
 - C. The institutional structures and groupings that together form the social system should be identified. These include the institutions of government, the economy, family, education, and religion along with leisure, culture, and community resources and organizations. All groups that may be affected by inauguration of mining should be identified in their institutional relationships. The premise is that change in any social institution will result in change in all others in the system.

II. Specifying the nature of the environmental change.

(For coal mining the EIS outline of impacts specifies those common to all provinces and those unique to a province, those that can be mitigated and those that cannot, and those related to the mining

processes of off-road travel, road construction, exploratory drilling, exploratory excavations, development, facility construction, production, coal beneficiation, coal marketing, and rehabilitations.)

- III. Specifying impacts basic to the social system and predicting probable change. Such impacts may be to the spatial and economic resources, to social space with changes in population and distribution, to social definitions, and to the institutional structures. Bringing together the history, impacts, and social system provides data for assessment.

II. Evaluation of the Coal Leasing Statement Social Impact Sections:

The Statement contains very little of the kind of analysis outlined above.

It is distinguished both by a high level of generality in which environmental impacts are translated into "threats" (III 1) and by what is missing. Only a few examples of the inadequacy can be suggested here.

A. Historical perspective:

The mining history of the Rocky Mountain Province is mentioned (II 116) but without any analysis of the effect on the environment, the history of boom towns and areas, or success in reclamation. The use of up to 65 percent of the land in some regions for the increase in outdoor recreation (II 107) is not followed by predictions of the economic or social significance of this growth to the region or the potential loss from mining degradation.

The use of 60-70 percent of the federal land in the Northern Great Plains for livestock grazing (II 173) is not related to the present economy or basis of life styles, to the national and world food supplies and requirements, or to disruption by mines and power plants.

More important, the viability of these rural areas and communities for the personal and social development of the men, women, and children now there is not

assessed in any way. The relatively recent impact of paved roads, mass media, electricity, and consolidated schools has changed the communities. No data on the historical development of resources and social institutions is included.. How can prediction begin without such a historical basis?..

The lack of history is even more evident in the attempt to avoid dealing with the Northern Cheyenne, Crow, and other Native Americans using federal lands underlaid with coal. The reservation system, powerlessness and hopelessness, and continual economic depression are only part of the history. An ancient culture, self-definitions related to the land, and a revival of social identity are elements in the Native American's definition of the potential impact of mining on attempts to reweave a delicate social fabric.

B. Definitions of self and society:

The summary of an evolved and evolving set of self-images and orientations as "rural" and "conservative" neglects change, differences among various groupings of people, and problems of labelling one culture by values from another. Can "conservative" describe adequately the orientations of both landowners and the marginal poor, of generations of early settlers and generations of youth with new horizons, or of "cowboys" and their families and of miners and theirs? Conflict in politics and in aims is ignored, yet is quite real to residents.

A kind of contempt for the culture, especially that of the Native American, is revealed in the reference to the "social fabric for what it's worth" (V 8). Presumed improvement by the infusion of more "liberal" values from mining newcomers (V 6) is not supported by data on the values of either group.

Adequate data on social orientations requires listening, not labelling. It requires identification of different groups, not lumping by region. Just as important, the relationship of the self-images and social definitions to the probable impacts and to possible conflict, adaptation, surrender or retreat, calls for

analysis relating definitions to decisions.

However, the EIS correctly suggests that due to the very possibility of mining changes in social orientations have already begun (IV⁷).

C. Institutions of the social system:

The "threats" to social institutions by population increases of 800 percent (III 59) in some areas are suggested, but not specified. Impacts are defined almost entirely in terms of providing facilities and services for more people - some of whom may stay only months, others a few years, and an unspecified number indefinitely. Again, no data on previous population shifts and depletions or on experience elsewhere with strip-mining labor are provided.

However, social impact only begins with building schools, waste treatment plants, and housing. In a social system - even one with deep divisions - the institutions are interrelated. Conflicts in orientations among groups of youth are not resolved simply with a new swimming pool and more police patrols. Effects on family patterns amid growth and diversity, the loss of face-to-face relationships in which everyone knows everyone else, new mass, increased pluralism, new job opportunities for youth, new reward structures, numbers of "unassimilated" teachers in the schools, and countless other interacting institutional changes are both complex and profound.

In brief, the social fabric of the Rocky Mountain and Northern Great Plains areas will be altered in every respect by the incursion of mining and power production. The social system can be assumed to be at least as complex and at least as important as the eco-system. No less careful analysis of probable impacts can meet the requirements of the National Environmental Policy Act or of the 1973 Council on Environmental Quality Guidelines. A few examples of missing analysis follow:

-- Economic impacts predict a "boom" for the areas to be mined (V 7). However, which parts of the economy will boom, which parts will be damaged, and what kind of new economic system is likely to emerge are questions not addressed. Further, the long-term economic effects of such disruption accompanied by degradation of the land on which the present economy is based are not mentioned. Concern of the Northern Cheyenne people over control of employment opportunities related to mining on their reservation stems partly from evidence that local workers have usually been given only low-level jobs in construction and mining. The impermanence of new jobs may as well lead to the dissolution of communities as to their building.

-- The "temporary overload" of community facilities (III 16) in areas of sparse population would seem to be a problem requiring more than some planning. Governmental institutions would have to be reconstituted to deal with the "social instability" (III 43). A massive and partly temporary influx of workers (III 16) alters land use (III 20) for housing, transportation, service facilities, and recreation (III 54). Resources such as power, water, and space require radical development and reallocation.

-- In many cases, entire new communities will be built (VI 6). These will require services and facilities to be provided from existing governmental agencies and structure. Further, many will have an atmosphere of impermanence. The development of social institutions in new communities may be no less difficult than reorienting the old churches, bars, schools, and shops in existing communities.

-- Recreation impacts are related to present use of resources and to the new populations. The effects of mining and power production on the environment of parks, forests, and private development are only mentioned (II 116). New residents may exert pressure for different kinds of recreation than is now available. More of the same (III 63) is not likely to meet their expectations. The economic impact of mining on the ascendent recreation industry in Colorado is suggested as a "threat" but not analysed (II 118-9).

-- References to indices of social problems such as crime rates (V.7), to culture clashes, to waste disposal, and to impacted facilities only hint at the manifold aspects of a social system. Housing provisions, for example, affect family, economic, political, religious, cultural, and educational patterns and provisions. Social systems are complex, many-celled, permeable, and frequently quite fragile.

Predicting social impacts:

Specific impacts on land and environment are not related to the social system in the EIS. For example, the probable massive diversion of water (III 56) means that the water will not be available for other uses. The effects of this diversion on the eco-system, on agriculture, on the climate, and so on are not detailed. In arid areas, effects of diverting the little water available will leave nothing unaffected (VI 7).

The effects of strip mining may be relatively localized (I 6) although the extent of land area that may be mined is vast and stretches from North Dakota to New Mexico. However, the largest expected use of the coal is for producing electric power (I 71). Due to delivery costs much power production is likely to be at or near the mines (I 187). Separating mining impacts from those of power plants would seem to be unrealistic.

If so, then 42 or more plants in the Plains alone (III 74) would be expected to yield the social impacts suggested in the EIS. They include emissions that would endanger the health of people and livestock, consumption of vast amounts of water further draining the aquifers disrupted by the mining, fly ash that may be radioactive, and added concentrations of people (III 70-73). Add the aesthetic disfigurement and the relative permanence of such plants to the downwind dangers and the result is considerable increase in the scope of impacted areas. The grazing economy and agricultural society of vast downwind areas may be considerably degraded by power production.

The scope of the social effects of mining and power production together

would have social impacts far beyond the Plains states. What the Middle West might gain in power could be offset by the loss in meat and grain production. The possible health costs of food shortages and contamination are incalculable.

A second limit in the report, like ignoring power production, tends to minimize the social impact. The lands under consideration for mining adjoin Indian Reservations at several critical locations. Coal is also in Reservation land. Especially the Northern Cheyenne have been alerted to the potential dangers to their people, their land, and their ways of life. The efforts to renew the cultures of Native American peoples in a world controlled by laws, agencies, courts, and customs foreign to their ways face enough obstacles without massive industrialization. The fragile culture of such peoples could be expected to undergo change as radical as that forced by previous white invasions. As before, the invasion of miners would be temporary and an "interim" use of the land, but the social disruptions would last. Serious consideration of models of exercising some control over mining (II 183) is needed.

A long-range assessment of social impact would be that neither the land nor the people will ever be the same after such mining and power usage. The costs will be spread over a much greater population and for a much longer time than the EIS suggests. Changes in the systems of interrelated institutions will be profound. The draft of the EIS is simply not an assessment of social impacts at all, but a collection of general comments that are not systematically related to mining and power production.

III. Adequate Social Impact Assessment:

If the examples of the inadequacy of the EIS draft illustrate its failure to even address the task of social impact assessment, what would be required to begin the task again?

The outline of an approach to social impact assessment in section I includes the kind of material and analysis that would be necessary. The aim is prediction of the social impact of specific interventions. In an approach that includes history, social definitions, and social institutions, a data base is already available. Social scientists need not begin de novo on each study. The assessment can begin with what is already known about, in this case, social changes of this century, social definitions and decisions, and rural social institutions.

From what is known, questions can be developed that enable the scientists to gather data that is specific to the situation and fully contemporary. Such general and specific data provide a basis for analysing the social system.

Assessing the specific impact of the intervention, in this case mining and related power production, requires knowing the requirements of the project and the likely environmental consequences. Specific changes, the nature and location of the social impacts, can be calculated only knowing the scope and nature of the environmental impacts. Prediction is then site-specific for the impact area.

The time span of each part of the project and the probabilities of restoration and reclamation are also integral to the social impact assessment. Social systems cannot be restored to a previous condition, but they are adaptable to a wide range of changing conditions. The time frame of the intervention is crucial in assessing the long-term social changes. Prediction requires both a geographical and time frame of impact reference.

Finally, an evaluation of the social costs and benefits of an intervention should be based on the most comprehensive assessment of impact possible. Costs and benefits to various populations may be compared for severity as well as the number of persons affected. Decisions on an intervention such as mining are usually based on some economic gain predicted for some segments of a total popu-

lation. Such economic gain may involve economic loss for others. The same is true of the more complex social assessment. Weighing of net gains in the quality of their life together for some against net loss for others requires at least as comprehensive an analysis of relevant data as does the economic balance-sheet.

Sue Johnson provides this context for her and Rabel Burdge's open letter:

On August 1, 1974, a meeting sponsored by the Red River Legal Defense Fund resulted in our being asked to do a household survey of residents scheduled for relocation by the controversial proposed Red River dam. This survey could not be an official university activity because the Fund could not pay the full costs of this research; interviewers were reimbursed for expenses only. Seven interviewers were hastily assembled and instructed in the use of a semi-structured interview schedule based on past relocation studies by Burdge and Johnson. On Saturday, August 3, teams of interviewers canvassed the take-area, reaching 38 households of the estimated 55. The rest were not at home. On August 5, the letter reprinted here was written. Coding of the interview schedules took a full week. Structured questions were quantified, and open-ended responses content-analyzed.

The report of the research was written in eight hours on August 12 and 13, missing the August 12 deadline by half a day. (The deadline was somewhat flexible due to the August 5 letter, but the Fund needed time to write up affidavits for their law suit.) The following Sunday, August 18, Johnson signed an affidavit alleging inadequacy on the part of the Army Corps of Engineers in their preparation of the Final Environmental Impact Statement.

The major deficiency of the (authors') study is, that there was insufficient time to interview residents of Clay City, who are frequently flooded by the Red River, and flood protection for these residents is an important part of the rationale for the dam. This necessary oversight may be corrected in the future as litigation proceeds and time permits. It should be pointed out that the Red River Gorge and environs has been called the "Grand Canyon of the East," and the considerable controversy has surrounded first an attempt by the Corps to flood the upper Gorge in the early '60s and now an attempt to flood the lower Gorge, which would flood not only valuable farmland but increase the possibility that the backup may encroach upon unique ecological and scenic features of the upper Gorge.

The full report is available from Sue Johnson, Center for Developmental Change, University of Kentucky, Lexington, KY 40508. The title is "Report of Household Survey--Red River Residents Due for Relocation," by Sue Johnson, Rabel J. Burdge and William F. Schweni. Its contents corroborate the basic argument made in the letter.

An interesting postscript on this study is added by Johnson. In response, the Corps hired their own consultants, whose independent analysis confirmed the authors' findings. When this portion of the consultants' report was deleted by the Corps study managers, their own consultants joined the plaintiffs in pressing legal suit. Nevertheless, as Johnson and Burdge reflected upon their own experience as expert witnesses, the logic of social research is considerably at variance from the logic of legal proceedings. Qualifications a social scientific researcher may feel necessary tend to count against the credibility of their own testimony, as in the exhibit to follow.

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CENTER FOR
DEVELOPMENTAL CHANGE

5 August 1974

TO WHOM IT MAY CONCERN:

This letter addresses the issue of the adequacy of the Final Environmental Impact Statement (1974) of the Red River Lake Project undertaken by the Army Corps of Engineers, Louisville District.

The area of expertise represented by the undersigned is in the relocation of families due to reservoir construction. Vitaes are appended.

The National Environmental Policy Act of 1969 (Public Law 91-190, S1075) states (Sec. 102): "all agencies of the Federal Government shall

(A) utilize a systematic interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment;
[and]

(C) "any adverse environmental effects which cannot be avoided should the proposal be implemented, need a *detailed statement by the responsible official.*" (Italics ours)

It is our contention that the Army Corps of Engineers has neglected these parts of Section 102 of NEPA. With regard to the first, the inclusion of the social sciences as sociologists see that the only sociological data included in the final EIS are on pages 24-25. To quote:

"Population. The population figures for the three county area are given in Table 10, Appendix V. Wolfe and Menifee counties have experienced a decline in population over the past decade while Powell County experienced an increase over the same period almost equalling the decline of the other two counties. This is a result of Powell County's shift from a basically agricultural economy to a more service oriented economy. This trend will probably be accelerated by construction of the project as the county lies along the primary access route from major metropolitan areas. Economic conditions are also a major

factor in the population decline of Wolfe and Menifée Counties. Per capita income in both of these counties is below that of Powell County.

"Population change due to the death rate is fairly constant within the three counties and it is expected that this rate will be sustained for the next several decades. Population change due to the birth rate depends on various socio-economic factors. The birth and death rate figures for the three counties are given in Table 10, Appendix V. A comparison of the figures for Wolfe County indicate that the outward migration from that county is predominantly of younger people of child bearing age.

"The median level of educational attainment for the three county area is 8.3 years as compared with a national average of 12.1 years.

"Employment and Economic Level of Development. Although agriculture accounts for the major land use of the area, it comprises a small and constantly declining segment of the economy. The labor force is concentrated in two areas of employment: manufacturing and government employment. In general, the individual manufacturing establishments are small, usually employing less than 20 persons. In Powell County service related employment, although totaling only 6.6 percent, showed an increase of 43 percent during a four year period from 1963 to 1967. This trend can be expected to continue in the future.

"In 1969 the median family income was \$5,034 in Powell County, \$5,065 in Menifée County, and \$2,694 in Wolfe County. These are well below the national median of \$9,590. These low family incomes are reflected in the large welfare rolls of these counties. In Wolfe County, 37 percent of the families receive public assistance. Powell and Menifée Counties which have about double the median family income have about 18 percent of their family units on public assistance rolls."

The birth and death rates are not given in Table 10, Appendix V. However, this is not to say there are no socio-economic data given in terms of projected benefits during the construction and operation phases (pp. 38-41) and from the recreation potential of Red River Lake (pp. 25, 52-53).

With regard to the "Detailed statement" about the families to be relocated, we quote:

"Displacement and Relocation of Families. Resettlement of the residents displaced by inundation involves frustrations,

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difficult decisions and uncertainties. To the extent that these effects can be mitigated financially, provisions have been made for resettlement allowances, allowances for dislocation of farm and business operations, relief from higher interest rates, rebate of prepaid real property taxes, severance damages and payment for property acquired. The project will result in the displacement of approximately 55 family units" (Page 42).

The Environmental Impact Statement on page 45 lists as a long-term unavoidable adverse effect on the environment the possibility that "cultural traditions which are primarily restricted to the local area may be threatened by displacement. However, none have been elaborated during study of this area." We would suggest that this is a "significant effect" -- that is, according to Regulation No. 1105-2-105, Department of the Army, Office of the Chief of Engineers (December, 1972), "One which would be likely to have a material bearing on the decision-making process" and the determination of which "should be made at the earliest stage possible in the assessment process" (P. A-3.) Attachment A to these guidelines states that the cost of "eliminating or minimizing such adverse effects . . . [as] injurious displacement of people, businesses and farms . . ." (P. A-7). The final Environmental Impact Statement addresses one paragraph (see above) to this potential impact.

To suggest the magnitude of the omission of this human concern, on Saturday, August 3, a team of interviewers were sent to interview all the families in the area that could be reached. A separate report of our findings will follow this letter. However, a summary of findings from previous studies is in order here to merely suggest the magnitude of the possible impact of relocation on rural Kentuckians.

- (Taylorsville and Caesar's Creek) of 259 individuals interviewed who were waiting to be relocated for the reservoirs, 63.7% stated that the change due to relocation would "probably" or "certainly" not be rewarding.
- (Taylorsville and Caesar's Creek) 79.6% of 260 individuals said it was "hard to leave" their place of residences. Reasons given for this were "ties" to place (79.6%), neighbors (83.9%), and friends (83.5%).
- (Taylorsville and Caesar's Creek) 73.5% of 260 individuals said "not knowing what to expect is unnerving," and 73.8% said that they "like this area best." 70.0% said "this area is in my blood," and 51.9% said "This is the only place I can call home."

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- (Taylorsville and Caesar's Creek) 188 of the 200 individuals could not say specifically where they would move; however, 69.7% of those preferred to move to another farm. 95% of those with unspecified locations who answered how far they'd be willing to move said either not out of the county or "not far" even if out of the county.
- (Carr Fork) 33.8% of 198 families found their financial situation had worsened after relocation. (This was before the Uniform Relocation Act of 1971.) Of these 43.6% blamed this worsening on relocation.
- (Carr Fork) More than half the people who bought acreage after relocation had less land of inferior quality and less tillable than what they had previously owned. Forty percent of the 110 families with gardens no longer had one.

To suggest that the potential problems associated with relocation are a "significant effect" of the proposed reservoir and that the Army Corps of Engineers has failed to take this potentially significant impact into account, primarily through the non-utilization of social science input into the planning process.

After the briefest possible review of the data collected on August 3, we have every reason to believe that conditions similar to those described above exist among those slated for relocation by the Red River Lake Project. A thorough analysis of the data is now being conducted.

Respectfully,

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"Note: The Academic Research Group
as a Model for Social Impact Assessment"

The Public Lands Project of the Center for Urban Affairs, Northwestern University, engages in four types of activities. Of primary interest to readers of this number of Environmental Sociology, the project has participated in administrative, agency decision making processes on, to date, some ninety governmental programs or proposals, predominantly via the environmental impact statement (EIS) review process. Second, members of the project conduct scholarly research on the politics and administration of natural resources and the public lands of the United States. Third, project members serve as consultants to a variety of citizens' organizations and government agencies, particularly conducting applied, social science research on topics related to environmental policy making. Fourth, the project maintains a library of environmental impact statements, government documents, professional and law journals, and periodicals.

The project professional staff is composed of H. Paul Friesema, Associate Professor of Political Science and Urban Affairs, Paul J. Culhane and Sam A. Carnes, Ph.D. candidates in political science and Terry L. Stranke, a political science graduate student and law student. Richard A. Liroff, a Ph.D. candidate in political science at Northwestern and member of the staff of the Environmental Law Institute, Washington, D.C., is also affiliated with the project. Mr. Culhane will be leaving the project in the near future to join the faculty of the Department of Political Science at the University of Houston. The principal research interest of Professor Friesema, Mr. Carnes and Mr. Culhane, before forming the Public Lands Project, was in the area of urban and community policy. The environmental impact statement review work of the project is primarily conducted by Professor Friesema and Mr. Culhane.

The environmental impact statement review function of the project is not now, nor has it ever been directly financed by any source. Project members have carried on their EIS commenting work as a part of their professional research function. Project overhead (office space, mailing costs, etc.) and an undergraduate research assistant/librarian have been provided by Northwestern's Center for Urban Affairs; a small grant in 1973 from Citizens for a Better Environment, a Chicago environmental group, has helped underwrite the cost of maintaining subscriptions for the project library.

EIS Review Activities. For the purpose of maintaining the project library, Professor Friesema follows the Federal Register and writes various federal agencies, requesting a copy of each EIS they release for public distribution.¹ When EIS's are received by the project, they are briefly examined to determine if project members might be interested in commenting on the statement.

Project members select EIS's for comment based on the relationship of the EIS to other research activities, and on personal competences and predilections. The selection criteria include;

- Geographic location; EIS's from geographic areas in which project members have conducted research or are personally familiar with for other reasons. For example, a number of the proposals commented on by the project have been located in northcentral New Mexico, a field research site of two of the members of the project staff, and the home of a third..
- Functional specialization; Professor Friesema tends to specialize in water resources development EIS's (i.e., EIS's prepared by the Corps) and energy EIS's, while Mr. Culhane tends to specialize in public lands agencies (e.g., the Forest Service and B.L.M.).
- Substantive specialization; The project has, for example, special interests in EIS's related to energy development (particularly in the Northern Great Plains), issues involving special impacts on Native Americans and other cultural minorities, and Forest Service recreation developments (primarily ski area leases.)

The project has, however, prepared comments on almost all types of governmental actions for which EIS's have been written (roads, dams, channelization, mineral exploitation, recreation development, airports, forestry, pesticides and herbicides, power plants, weather modification, etc.); these comments have been directed at some 20 lead agencies; and the proposed actions were located in 30 states as well as nationwide. The project has commented on EIS's of major national interest (e.g., Cochiti Dam in New Mexico, the Alaska Public Lands, or ANSCA, proposals, and the Mineral King development), as well as some rather more obscure proposals (e.g., Pocket Gopher Control on the Angelina National Forest in Texas).

In commenting on EIS's, the project has tended to focus on social, economic and political impacts of agency programs. The project tends to ignore physical environmental impacts as not particularly within the competences of the staff.

1.. There is variation in requesting EIS's. The project does not seek to acquire many of the myriad Federal Highway Administration statements. The project has, however, sought to maintain a complete collection of EIS's released by the following agencies: Forest Service, Corps of Engineers, Bureau of Land Management, National Park Service, Atomic Energy Commission (now, the Nuclear Regulatory Commission), Bureau of Reclamation, Fish & Wildlife Service, Soil Conservation Service, Tennessee Valley Authority, and the Environmental Protection Agency.

Lastly, the activities of the staff have not been restricted to solely commenting on EIS documents. Investigative and follow-up contacts with lead agency decision makers and other interested parties are often absolutely necessary for effective use of the EIS process. It is still, however, necessary in preparing written comments to write detailed yet concise comments which address issues central to an EIS, to organize comments so that the logic of the comment is clear and inescapable, and to write with decision makers' constraints in mind (while not capitulating to those constraints.)

Findings about the EIS Process. The project's use of the EIS tool has been, over the years, fairly efficacious. A substantial proportion of projects which the project deemed unsatisfactory have been significantly altered or halted as a result of EIS processes in which the project was a participant. Several of the ways in which the EIS process can be quite efficacious have been discussed at greater length than is possible here by Friesema & Culhane (1974) and Friesema & Culhane (forthcoming).

While the decisional outcomes of many EIS processes may be fairly encouraging, Friesema & Culhane (1974) and Friesema & Culhane (forthcoming) are rather pessimistic about the quality or scientific rigor of the social impact analysis found in the typical environmental statement. The primary "social impact assessment" found in an EIS is an unelaborated, or at least unsubstantiated assertion that the proposed program will be economically beneficial. Other social impacts, especially differential impacts among social groups, are almost always either not discussed, poorly discussed, or misdiscussed. Among the factors which appear to lead to inadequate discussion of social impacts in EIS's are: methodological and/or epistemological deficiencies, lack of background in the social sciences on the part of decision makers and EIS writers (and often, a distinct lack of appreciation for social science), a common understanding that the EIS process does/should focus on physiographic impacts, the project-justification stance of lead agency EIS writers, and basic administrative taboos against recognizing the differential social impacts of agency actions.

Evaluation of the Public Lands Project's Experience. There are two aspects of the activities of the project which appear salient in determining whether the project's experience is a generalizable model for social scientist who wish to affect the social impacts of governmental policy. The first is the project's structure as a nonmembership "research group." The second is the project's choice of the EIS process as a vehicle for social assessment advocacy.

As an advocate and adversary, the project's activities are roughly analogous to the role of the professional staffer of an environmental (or any other) interest group. This approach may be more efficacious than, for example, a consulting role, because the project as a commentator can act independently, uncoopted and uncompromised.

The limitation of this adversarial approach of an ad hoc academic group is that such an organization is unfundable for general operating expenses, particularly staff salaries. Academics who carry out socioenvironmental advocacy must do so as an "extracurricular" activity or justify the activity as a part of their normal research responsibilities. However, it is no more difficult for academics to conduct this activity than it is to carry out other research or community service activities without direct remuneration.

The advantage of relying on the EIS process as a vehicle is that the EIS creates a fairly discrete occasion for a decision, and legitimate entry into the decision making process irrespective of the legal standing of the social scientist, whether or not the social scientist was a part of the agency's organization set before the release of the EIS, or the geographic distance of the decisional locus from the social scientist.

The disadvantage of the EIS process is that, of course, not all policy decisions are made by administrative agencies, nor made by agencies following an EIS. The courts have been an important forum for environmental decision making, but the project has never litigated. Legislation (NEPA, the Clean Air Act, Federal Water Pollution Control Act Amendments of 1972, etc.) has been important in environmental policy making, but the project has never lobbied. However, agencies are also important loci of decisions, environmental groups can be effective working primarily with administrative agencies (see, for example, Culhane, 1974), and the EIS process has become an important feature of agency environmental decision making (Culhane, 1974).

Paul J. Culhane

Selected Public Lands Project Publications

H. Paul Friesema. "The Forest Service in Crisis in Northern New Mexico."

Paper read at the Meeting of the Midwest Political Science Association, Chicago, September 1971.

H. Paul Friesema and Paul J. Culhane. "The Environmental Impact Statement Process: Technical Assessment or Political Advocacy?" Paper read at the Meeting of the Society for the Study of Social Problems, Montreal, August 1974.

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NORTHWESTERN UNIVERSITY

EVANSTON, ILLINOIS 60201

November 3, 1973

PUBLIC LANDS PROJECT

2040 SHERIDAN ROAD
EVANSTON, ILLINOIS 60201
TELEPHONE (312) 492-2559Mr. Wayne E. Stephens
Director, Planning Support Group
Bureau of Indian Affairs
Billings, MontanaIn re: Crow Ceded Area
Coal Lease - Westmoreland
Resources Mining Proposal:
Draft Environmental
Statement.

Dear Mr. Stephens:

We feel that there are some serious deficiencies in the draft environmental impact statement and also in the mining proposal itself. We feel that these deficiencies are so serious that the BIA should either cancel this proposal entirely, or substantially revise the proposal and then submit an entirely new draft environmental impact statement.

In the first place, we believe that the BIA has, once again, found itself with a conflict of interest. On the one hand, as the introductory paragraph illustrates, the BIA, as an agency within the Department of Interior is strongly interested in solving the so-called energy crisis by rapid development of Fort Union coal. But you also owe a trust obligation to the Crow Indian Tribe. In this case, when the interests of the Crow clash with the interest in developing the coal, the Crows lose. That is in the great and well known BIA tradition, of course. Fortunately for the Crows, and the non-Indians in the area, the so-called coal leases of June, 1972 seem to be illegal and void, and so any coal mining on Tract III will have to be renegotiated. The belated appearance of this environmental impact statement amounts to an acknowledgement that these developments are in fact likely to have a major environmental impact, requiring the NEPA procedures. But NEPA and the CEQ guidelines make it unambiguously clear that the impact procedure must be complied with prior to any major action on the project such as these illegal leases. Therefore, the contract should and must be renegotiated. It ought to be renegotiated on terms which are far more favorable to the Crow. These more favorable terms should include substantially more money, and serious contractually imposed requirements upon Westmoreland to ameliorate the social, cultural, and environmental disruptions this development will create.

(1) Social and Cultural Impacts - Our first concern, in particular, has to do with the social and cultural disruptions this development will create, for Indians and non-Indians alike. We think that the evaluation concerning such disruptions is entirely inadequate. It is generally recognized that urbanization and industrialization in a rural society impose special problems. They need to be anticipated and considered, not only for the Indian community but for the possibly impacted communities of Hardin, Hysham, Lodgegrass, Sanders, and

Crow Agency. Although the proposal does not project a vast population increase for these towns, any increase at all will have serious social and cultural repercussions. We suggest that the final EIS consider that the development will affect family stability, life style choices, crime and social disorder, rates of alcoholism, and the levels of happiness and aspirations for both the Crows and the non-Indian inhabitants of the small towns in the area. It can be anticipated that increased levels of employment would lead to greater mobility and more social choice, which, in turn, would lead to a departure from traditional social and cultural life styles. If this is the case, do those people involved wish for this to happen? Also, the development would probably lead to increased social pluralism, so that traditional forms of family life and authority would be seriously threatened. Some of these things may be occurring anyway, as communities in Montana become integrated into the urban control structures of American society. But the changes precipitated by even the low level of industrialization and urban growth predicted in the EIS for this first stage will sharply increase and magnify these changes, as the communities lose control of critical decisions to corporations and government agencies far away, and as the communities come to be places of strangers.

Moreover, we think that the hiring and operating plans of Westmoreland et al are in their interests, and not in the interest of the Indians. The proposal calls for the hiring and training of some Indians. That whole thrust is misplaced. The clear assumption is that the Indians should alter their ways to become the types of workers that the mining contractor would like. Your EIS reports (page 94), "The training program includes continuing education and training to develop a sense of responsibility among the Indian work force." On page 95 you say, "Later, as the Indian training program develops a responsible work force, the Indians will move into openings created by workforce turn-over and by future expansion of the mining operation." Rather than attempting to remake the Indians in the mold of a European-stock urban work force, we strongly urge that the industrial enterprise should be shaped around the Crow's value system. You do not provide nearly enough information on Crow values to fully know what might be appropriate, but you do quote a Crow that "personal gain and the accumulation of private wealth has little prestige value in Crow communities." You say, on page 36, that this is an accurate description. That implies, to us, that the Crow workers may prefer an occupation in which they work until they feel that they have made enough for awhile, and then prefer to do other things. For any number of reasons which might seem inexplicable to those geared to American industrial management, the Indian workers may prefer a working arrangement rather than becoming part of a "responsible workforce." For example, Indians ought not to be subject to disciplinary action for taking time off when they need to for tribal, familial or other cultural reasons. Being familiar with other training programs for native Americans, principally BIA's SIPI in Albuquerque, New Mexico, we recommend that both PINTO and future employment by Westmoreland be more sensitive to the various needs of the workers. Surely, Westmoreland and PINTO could accommodate their requirements to the labor force's cultural obligations, interests and values. At best, such efforts can only partially reduce the impacts of bringing a complex technical process to these people. For the industrially induced division of labor which will occur will inevitably mean among other things, that present authority patterns and community cultural obligations will be increasingly overlain with a different and conflicting set of norms and obligations of the urban, industrial world. This will probably lead to increased social disorganization among the present

population in the area. Every effort should be expended, by the BIA, acting in its fiduciary capacity for the Indians, to mitigate and reduce the disruptive effects of this enterprise. There is nothing in the impact statement to suggest that this duty is being fulfilled.

There is nothing in this impact statement to indicate that the BIA is doing anything to anticipate or ameliorate the social problems which this type of development will inevitably create. Your "concern" over social consequences is well illustrated by your discussion of "Unavoidable Adverse Environmental Effects" (Chapter 5) when you discuss "social impacts." You write, (p. 155) "The adverse social effects of any endeavor or development can be measured only in terms of the inhibiting characteristics of social change on reaching social goals" (sic). That totally defies interpretation. You continue, "With a planning process designed to effectively use tribal income, adverse effects can be quantitatively predicted and their significance evaluated." We can interpret this sentence. It suggests that the tribe ought to use some of its royalty payments to assess the adverse social impacts, which, you assert, can be quantitatively predicted and evaluated. We suggest that you are required by law to assess the adverse effects as part of the impact statement. The responsibility cannot be shucked off onto the tribe, for sometime after the proposal has become operative.

There are other problems with the proposed hiring policies of Morrison-Knudsen. You write "In view of the Morrison-Knudsen record of successful training and employment of Indians and Crow and other reservations, it is safe to estimate that substantially over 50 percent of the positions at the mine will be filled by Crow Indians." It is absurd to leave that as a "safe estimate." The just released U.S. Civil Rights Commission staff report on the Navajo reservation clearly and unmistakably indicates what little value the promises about Indian employment on strip mining and energy projects can become. If, indeed, it is a "safe estimate" that better than 50 percent of the employees will be Crow, then Morrison-Knudsen ought to be under no difficulty in guaranteeing, as a term of the contract, that better than 50% of the workers will be Crow Indians. We would expect it to be necessary to impose some severe penalty upon the company (whether Morrison-Knudsen or Westmoreland, we care not), for non-compliance with this term of the contractual arrangements to be entered. We understand that there may be initial problems for the company in achieving this rate, so suggest that it not become effective until the second year of the contract. By the third year we believe the contract also ought to mandate that at least 50% of the supervisory and management positions be filled by Crow Indians. We even suggest the desirability that the Crow supervisory and managerial appointees should be selected by the Tribe, rather than the company, using tribally determined criteria.

We understand that there may be some difficulty in getting Westmoreland, et al. to agree to such conditions. But as much should be extracted from the companies as possible. The companies appear to be at some disadvantage in any renegotiation of these leasing and mining agreements, de novo, as they have fairly heavy sunk investments in Ceded Area Tracts II and III, as well as contractual obligations to deliver coal. As a fiduciary, acting on behalf of the Crow, it is your duty to press this negotiating advantage as far as it goes. If, because Department of Interior policies concerning coal development, solving the "energy crisis," etc. interfere with the BIA's ability to act in the interest

of the Crows, then it seems to us that the BIA ought to withdraw from any role in determining this matter, and have the Crow represented by others who can genuinely act on behalf of the tribe.

(2) Impact on Race Relations.- It seems almost certain that one of the byproducts of the development as outlined in the draft environmental statement, will be increased racial hostility and friction. Whatever the present accommodations as between the Indians and whites in this area, they will become unstuck as many new white workers move into the area, and come into work and other contact with the Indians. The respective ways of white urban workers and the present local population (both Indian and non-Indian) will almost certainly be mutually incomprehensible, to some degree. That condition breeds fear and distrust. But when you add to that the fact that the white newcomers will have higher education, more skilled and responsible work, and more money than either the Indian, or much of the present non-Indian population, you add up the conditions for volatile racial relations. It is abundantly clear that much of the current tumultuous state of Indian-white relations, as illustrated by Wounded Knee, can be attributed to the impositions of an urban American industrial state upon people whose values are different. With stripmining and its ancillary developments, that urban industrial state is going to be right there in Crow Agency and Hardin, Montana.

(3) Fiscal and Political Impacts - We think you greatly understate and misstate the consequences of the development upon the adjoining communities where people associated with the development will live such as Hardin. You assert, on page 18, that, "the increased tax base would permit expansion of necessary community facilities." But it appears that the industrial developments may not be located in some of the taxing jurisdictions where people will live. If so, it is probable that the increased public expenditures for schooling the newcomers, policing them, etc. will not be paid through any adequate increase in the tax base of the responsible jurisdictions. If the Westmoreland developments are going to have the asserted impacts on adjoining communities, then Westmoreland ought to be required to make some payments in lieu of taxes to these jurisdictions for the costs of public service that the development creates. For, apart from a very small number of merchants, all the accumulated evidence is that the present residents of these towns will receive absolutely no monetary benefits from these developments whatsoever. The jobs and wealth will go to newcomers. The old residents will simply bear a large part of the costs.

Incidentally, we think that your analysis of the demographic data is inadequate. Your essential comparison of income, poverty, etc. was between Crow Indians and all residents of Big Horn and Treasure counties. It would be more appropriate to present a comparison of Indian and non-Indian incomes, poverty, etc. If you did so (not counting the Indians twice), we think this would graphically illustrate why few of the new jobs would go to present non-Indian residents of the area.

It is probable that, in addition to social and cultural pluralism, the mining operation will lead indirectly to political pluralism. Rather than the consequent style of decision-making usually present in a small town, political conflicts will increase in number and intensity. Traditional sources of authority,

whether it be the tribal council or a socio-economic elite in a small town, will break down, and power will be diffused. The repercussions of this diffusion of power needs to be considered, we believe, in the final EIS. Another probable political impact of the mining operation will be a loss of local control over the political process. Traditional loyalties, whether to the tribe or the town, will break down, and other loyalties will take their place. It would be expected that as these transitions are made, the local people would tend to become increasingly alienated from their local governments and would feel, justifiably or not, less efficacious in their control over local governmental affairs.

(4) Responsibility for Enforcement - In general it appears that the various industrial interests, especially Westmoreland and Burlington Northern, are responsible for complying with the various requirements set forth in this proposal, with no provision made for external supervision. We do not believe this to be reasonable.

For instance, would it not be better to have an independent agency, rather than Burlington Northern, enforce the provisions of the railroad construction contract relevant to the minimization of environmental impact? (p. 135) With respect to the future discovery of significant historic and prehistoric sites during the mining operation, we do not believe that Westmoreland should be responsible for notifying the State Archeologist, because it is not in their interest to do so; perhaps Westmoreland could hire an independent archeologist to oversee this part of the operation. (p. 136) With respect to assessing the effects of coal strip mining on wildlife species and their habitats, we do not believe that Westmoreland will do the kind of job necessary in gathering appropriate information and in monitoring the effects of their mining. They are in the mining business, not wildlife management. It seems possible that Westmoreland could appropriate monies to the state or federal government to pay for expert analysis of coal strip mining effects. In general, we do not believe that vested private interests should be expected to enforce impartially the regulations under which they operate. We have a number of shorter points.

(5) Future Developments - We believe you are legally bound to consider (1) the interactive effect of this development along with the other coal related developments in the region and (2) the effect of the reasonably anticipatable future development associated with this project. You do neither. You assert, on page 3, that future environmental statements will need to study the cumulative effects. To the extent that it is possible to do so, we believe you must do that in this document.

(6) Impact on Workers - We think there was an entirely inadequate discussion of the noise problem. Some of the decible levels you talk about seem damaging to employees and anything else nearby. The availability of precautionary measures is not sufficient.

(7) Impact on Hydraulic System - We think that there was insufficient attention in the draft impact statement to the prospect of damage to the coal bed aquifers - and particularly the depletion of ground water outside of the tracts under lease, with full coal development. It may be true (dubious), that "Regionally (outside of Tract III) the effect of the strip mining operation on ground water conditions in this aquifer will probably be moderate, unless the proposed mining area is expanded considerably." But every reasonable person knows that Westmoreland plans to expand the mining area "considerably."

(8) Mining Impact on the Topography - We do not believe you are correct in asserting (p. 158) "Only through an unreasonable expense and amount of effort could the land be put back into its original contours and conditions." Could you clarify what is considered to be an unreasonable expense for the total reclamation of the land? (p. 158). What would the expense be, and would Westmoreland be willing to consider whatever additional expenses necessary to accomplish the job? We do not necessarily believe that it is desirable to decrease the land surface gradient from the original, in that the land should have esthetic purpose as well as agricultural purpose.

(9) Crow Response to the Proposal - It seems vitally important that in the final EIS the Crow Indian leaders (p. 199) consulted during the preparation of the statement be identified and their opinions stated. Also, we suggest that Crows opposed to the mining proposal be solicited for their opinions and their reasons for opposition. This might be considered an incursion into the authority of the Crow Tribal Council, but given the controversy of this proposal and the probable applications for similar leasing arrangements elsewhere on Indian lands in the future, and given the increasing interest in this topic to all Indians, we feel that it would be appropriate to set such a precedent.

(10) Now that the National Academy of Science report on strip mining in the west is available, we believe this proposal ought to be strictly evaluated in terms of those criteria in a revised draft environmental impact statement.

(11) In view of the fact that the U.S. Senate has passed an amendment to the strip mine control act, which forbids any strip mining on land where the surface is owned by private citizens, but the mineral rights are in federal ownership, we believe you should do nothing, and allow nothing, which would thwart that intent, pending House action and final passage of that federal legislation.

Finally, we have one question. You simply add the expected tribal royalties to present tribal income, to arrive at the expected economic benefits for the Crow. But will not the increased tribal income from coal leases (and salaries) reduce some of the other present income from the Crow, so that their net gain will be less than you assert? If so how much?

Thank you for your attention to our concerns. Should these comments arrive in time, would you please read them into the record at the public hearing, as well as including them and responding to them in the final EIS. We would be delighted, of course, if this proposal does not go to a final EIS in this form. You should, in honor, completely renegotiate and redo this effort.

Sincerely,

H. Paul Friesema

Sam Carney

On behalf of the

Great Plains Communities Study Group

ENVIRONMENTAL MEDIATION: A FIRST DISPUTE

Flood Control, Recreation and Development in the
Snoqualmie River Valley

Gerald W. Cormick and Jane E. McCarthy

The Snoqualmie River Valley forms a green bracket around the Seattle, Washington metropolitan area. The valley can be divided into three distinct sectors: (1) the upper valleys of the North, South and Middle Forks of the Snoqualmie which flow through steep alpine valleys; (2) the middle valley which includes the confluence of the three forks of the river and has two towns of about 12,000 population; and (3) below a 168' falls, the lower valley where the river meanders through rich, green farmlands.

The dispute over flood control in the valley is a classic environmental conflict. Following a serious flood in 1959, the local county sponsored a Corps of Engineers study which resulted in the proposal of a flood control dam on the Middle Fork. The residents of the middle valley supported the proposed dam as it would prevent damage to their homes and businesses. The farmers in the lower valley supported it because it would control the crop-damaging spring floods which occur about every second year. A coalition of environmental and citizen groups opposed the dam on the grounds it would open the flood plain to urban sprawl, interrupt a free-flowing river and was unjustified on a cost-benefit basis.

In 1970 and again in 1973 the Governor said "no" to the dam, as proposed, on the grounds that it would be "environmentally disruptive," but noted that he continued to be concerned about the flood problem. Following a lengthy series of divisive public hearings, the Environmental Mediation Project (EMP) first became involved in the dispute in late 1973. Preliminary discussions were held with the State and the Corps, the primary decision-making bodies, to determine whether or not they would be interested in exploring the possible mediation of the dispute. Based on a first assessment of the issues and initial contacts with the various "parties" (environmentalists, farmers, residents and public officials), it was determined that mediation could be a useful tool in resolving the impasse.

The EMP then discussed with the Governor the possibility of his formally appointing the Project Director and Assistant Director (Gerald W. Cormick and Jane E. McCarthy) as mediators. After the mediators ensured that both they and the mediation process would be acceptable to those involved, the Governor formally appointed Cormick and McCarthy on May 7, 1974, requesting a report on their progress by June 30, 1974.

An immediate task was to identify the parties to the dispute. Public hearing records indicated those who had been leading spokesmen for various positions. The mediators conferred with these persons and many others, describing the process, discussing the dispute and asking, "Who are the ten or twelve persons who, if they could agree on something, have the kind of influence and stature that the various groups--farmers, environmentalists, etc.--would support them and anything they might agree to?" About ten names of persons who represented all important positions and shades of opinion in the conflict emerged from this lengthy process. Those ten became the "core group" for the mediation sessions.

Members of this core group were not formal representatives of any organizations. Their responsibility was to "bring along" their constituents as the discussions progressed. In a sense, they were also mediators.

Cormick and McCarthy worked with this group in joint and separate sessions and also provided a link to the key parties not "at the table"--the Governor, the Corps and county officials, all of whom were carefully kept current on the progress of the dispute in order to ensure their support for emerging recommendations.

Several initial points were established which were an important impetus to the discussions. The environmentalists discovered the farmers really didn't want to sell their land to subdividers and would support stringent controls to prevent such development. The residents of the middle valley began to understand the development concerns of the environmentalists and recognized that such development would make the valley less desirable to them as well. The environmentalists discovered that sprawl was occurring legally and illegally in the middle and upper valleys despite the flooding. And, the environmentalists began to see that their "win" was temporary and a future serious flood could not only lead to a dam being built but to the environmentalists being blamed for damages and injuries. The focus became, "How do we provide some level of flood control, insure the continued economic viability of the farmers and the towns and build the kind of land-use plans and controls that maintain the valley as a greenbelt with broad recreational value?"

It is difficult in a brief description such as this to relate the kinds and depth of effort performed by citizens when they feel they have an opportunity to influence decisions: The spokesman for the farmers who would arrive at 10 p.m., straight from haying all day, work in joint session until 2 a.m. and then head home for a nap before 5 a.m. milking. The Project Engineer at the Corps who would carefully research even the most peripheral questions, meet with any of the participants, and work all weekend and who established a level of credibility with all of the parties which proved invaluable. And, the environmentalists who assumed personal risk and abuse as they began to support flood control measures.

When the mediators reported to the Governor on their progress shortly after June 30, he asked that they continue their efforts and report back by September 30.

In late August the mediation appeared to have reached a stalemate. The environmentalists in the core group had been unable to formulate any common position in response to alternate approaches proposed by those primarily interested in flood control. At this point the mediators refused to call any further joint sessions until the environmental group spokesmen had gotten a position together and communicated that position to their constituents. This action, along with the return of a key environmental spokesman from a six week kayak trip in Alaska, led to a breaking of the deadlock. By the end of September a tentative agreement had begun to take shape.

On December 6th, after two months of painstaking effort to formalize specific provisions and final language, all of the participants in the mediation effort signed a set of joint recommendations to be forwarded to the Governor.

Generally, the agreement provides for a multi-purpose flood control, hydro-electric, recreational and water supply dam on the North Fork (rather than the Middle Fork) of the Snoqualmie, a system of setback levees in the middle valley which provide 100 year flood protection to developed areas, maintaining a large portion of the middle valley in natural flood storage and recreational use, controlling patterns of development through the purchase of floodway easements and development rights and the establishment of a basin planning council to coordinate planning for the entire river basin. The agreement also provides for appointment by the Governor of an interim committee, composed of participants in the mediation along with a few other citizens, to direct the implementation of the agreement. The interim committee will be provided with technical assistance from an advisory group representing various federal, state and local agencies.

The Corps of Engineers and county and local officials have indicated support for the package. (Preliminary studies indicate the basic engineering and cost-benefit feasibility of the proposal.) The Washington Environmental Council, a state-wide umbrella organization of environmental groups, has voted unanimously to support the proposal and they, along with a number of other citizen groups such as the League of Women Voters, the Alpine Lakes Protection Society and the Valley Greenbelt Association (the farmers' organization) have written letters to the Governor indicating formal support.

In a press conference held to announce the agreement, Governor Evans stated that he "thoroughly endorse(d)" the recommendations and announced the formation of the proposed interim committee as the first step in their implementation.

The EMP has carefully documented and recorded this first attempt to apply mediation to an environmental dispute. Our tentative conclusions from this and other environmental disputes in which we have been involved address such concerns as (1) which environmental disputes are most likely to be "mediable"; (2) the problems of identifying and conferring "recognition" on groups and individuals; (3) the proper relationship between such "unequals" as concerned citizens and public officials responsible for making decisions; (4) the length of time required to resolve complex environmental problems of broad interest; (5) how to deal with the lack of implicit or explicit deadlines imposed by the situation; and (6) how to translate agreements into implementation.

December 20, 1974.

ADDENDUM: Flood Control, Recreation and Development
in the Snoqualmie River Valley

It is now some six months since Governor Evans announced a comprehensive plan for flood control, land use and recreation in the Snoqualmie-Snohomish drainage system arrived at through the mediation process. Since that time the implementation process provided for in the agreed upon recommendations to the Governor have been going forward. The mediators no longer have formal involvement in the situation.

The Governor appointed an Interim Committee, as proposed in the unanimous recommendations, whose members represent both those involved in the mediation effort and a number of other constituencies whose support is necessary in ensuring the effective implementation of both the letter and spirit of the agreement. Members of that Committee, with the assistance of a liaison person appointed by the Governor to provide a variety of staff and other services, have spent long hours working with federal, state and local officials to develop the program necessary to implement the proposals.

As a part of this implementation and planning effort, the Chairman of the Interim Committee and the mediators were invited by Senator Warren G. Magnuson and Representative Lloyd Meads to testify before the Subcommittees on Public Works of the Committees on Appropriations of the United States Senate and House of Representatives. That testimony was on behalf of a Corps of Engineers request for funds to undertake the technical studies necessary to ensure the feasibility of the proposed flood control and other works as outlined in the agreement.

An important consideration for the mediators was to determine the point at which their formal responsibility should be terminated. There was an assumption on the part of some observers and participants that the mediators should assist the Interim Committee throughout the implementation process. However, one reason that a process for implementing the agreement was developed was to create a mechanism whereby diverse but concerned citizen and public groups could continue to interact. Accordingly, the mediators ensured that all parties were aware that with the signing and announcement of the agreed upon recommendations, their formal participation would end. This step not only clearly transfers the responsibility for implementation to the Interim Committee and relevant public officials but highlights a critical difference between the quite separate processes of reaching an agreement for future activity and the actual carrying out of that activity. Further, a continuing problem in the mediation of many other social disputes has been the difficulty experienced by some intervenors in severing a continuing obligation for facilitating the implementation of agreements reached. This not only could prevent the maturing of newly defined relationships between the parties themselves, but places a very real limit on the number of involvements possible for any intervenor.

With the beginning of June, 1975, the Environmental Mediation Project was re-funded by the Ford and Rockefeller Foundations as the "Office of Environmental Mediation" in the Institute of Environmental Studies at the University of Washington in Seattle, Washington. The goals of the Office over the next two years will be both to broaden the scope and variety of disputes in which it is involved and to work toward institutionalizing dispute resolution systems for the broad range of environmental problems which continue to confront us.

FAIRBANKS NORTH STAR BOROUGH

Box 1267, Fairbanks, Alaska 99707

IMPACT INFORMATION CENTER, A COMMUNITY-DIRECTED RESEARCH MODEL

Mim Dixon, Ph.D.,
Director,
Impact Information Center

Abstract

Vast oil and natural gas resources in the American arctic are being developed to meet the nation's demand for domestic energy sources. The trans Alaska oil pipeline is a landmark in both resource development and construction. At its inception, it was the largest private construction project in history. Prior to federal approval of the trans Alaska oil pipeline, extensive environmental impact studies were made as required by the National Environmental Policy Act of 1969. Although aspects of impact upon the "socioeconomic" environment were included in the environmental impact statement which was submitted to the U.S. Department of the Interior, little research was undertaken on the social impact of the pipeline construction prior to the actual event.

The Impact Information Center is studying the effects of construction of the trans Alaska oil pipeline on the community of Fairbanks, which is a principal administrative, supply, and transportation center for construction activities. By documenting certain social, cultural, economic, population, and other changes in Fairbanks resulting directly and indirectly from the pipeline project, this study may enhance the accuracy of social aspects of environmental impact statements for future resource development projects. It may also provide information which would help affected communities plan for impact and cope with its effects in a rational, systematic manner. And, the Impact Information Center provides a new model for community-directed research. This article describes the history and functions of the Impact Information Center and the role of the social scientist in this research setting.

INTRODUCTION

Current and past administrations of the federal government have given high priority to making the United States more independent with respect to its sources of energy. Domestic production of oil has been encouraged to meet national energy needs. Thus, a sense of urgency surrounds the development of Alaska's oil and gas resources. Passage of the federal Trans Alaska Pipeline Authorization Act of 1974 paved the way for constructing a pipeline to carry oil from the oil fields of Prudhoe Bay on Alaska's northern coast to the port of Valdez on Alaska's southern coast.

Construction of the trans Alaska pipeline system was officially begun in April, 1974, although preliminary work began as early as 1968. Initial phases of construction required building a 361 mile gravel road from the Yukon River to Prudhoe Bay, which includes bridges over 20 major streams and rivers and a 2,300 foot bridge over the Yukon River. Other preliminary construction includes three permanent airfields, eight temporary airfields, fifteen permanent access roads, numerous temporary access roads, and nineteen construction camps. The second phase of the project, scheduled for completion in mid-1977, includes construction of a 798 mile long, 48 inch diameter steel pipeline from Prudhoe Bay to Valdez, eight pump stations along the route, and oil storage and tanker loading facilities at Valdez. The final stage of the project includes construction of four additional pipeline pump stations and more oil storage and tanker docking facilities at Valdez. Estimated completion date for the construction project is 1977.

The cost of the project is now estimated in excess of \$6 billion. Alyeska Pipeline Service Company, the firm hired by a consortium of seven oil companies to build and operate the trans Alaska oil pipeline has hired two construction management contractors, Bechtel, Inc., and Fluor Alaska, Inc. Twelve execution contractors have also been hired. An estimated 9,000 persons were to be employed directly on pipeline jobs by the end of 1974, with 22,000 jobs in 1975. Many management personnel and skilled tradesmen are being brought to Alaska to do the work. Most unions have negotiated contracts which provide a working period of nine to 13 weeks, with 10 hours of work for seven days per week, and a rest and recreation period of one to two weeks. This yields paychecks of \$1,000 to \$1,500 per week for laborers and skilled craftsmen. Management persons usually work schedules of eight weeks of work and two weeks of rest and recreation, with salaries in the range of \$30,000 to \$70,000 per year.

The Impact Information Center was conceived by the community, and its ultimate rationale is to serve the community by providing information about the community. Thus, the fundamental approach is to gather information on a broad range of activities within the community and to disseminate that information in the most expedient manner. The accumulated information also provides a basis for analytical interpretation within a theoretical framework.

Data collected by the Impact Information Center is reported to the public in monthly reports. In July, 1975, the eighteenth regular report was produced. The regular reports range in length from 20 to 30 pages, and cover a broad variety of topics, including housing, food prices, traffic community services, and other areas. In addition to the regular reports, two special reports have been produced, one on minority and Alaska hire on the pipeline, and the other on the effects of the pipeline on Senior Citizens in Fairbanks.

Impact Information Center Reports are distributed to the news media; local, state, and federal agencies; and, persons who have requested that their names be placed on the mailing list. Currently there are approximately 500 persons on the mailing list. The Impact Advisory Committee meets with the Impact Information Center staff in monthly public meetings to review the reports and to suggest directions for additional research. Thus, the data regularly undergo the tests of public scrutiny.

In January, 1975, after the Impact Information Center had been in operation for six months, persons on the mailing list received an evaluation questionnaire. There was a 52.7% rate of return on the questionnaires. The results indicated that on the average, 3.3 persons read each copy. More than 77% of the respondents stated that they had actually used information contained in Impact Information Center reports. Some of the uses specified by the respondents included using the information for planning and decision-making; for reference in hearings, reports, or research; in news reporting; in agency reports; to support proposals or budget requests; to help people who are new to the community; and as part of speeches or programs. Every person responding to the questionnaire indicated a desire to remain on the Impact Information Center mailing list.

In addition to providing written reports, the Impact Information Center acts as a communications and referral center. Located in a storefront office in the heart of Fairbanks, the Impact Center serves as a walk-in center for local citizens and newcomers to Fairbanks. Traveling journalists, bureaucrats, and businessmen considering locating their businesses in Fairbanks, frequent the Center. Many persons telephone the Impact Information Center with questions, complaints, rumors, or information. And, the staff of the Impact Information Center is often asked to speak to local and visiting groups.

METHODS

A variety of methods have been used to collect community data. These include the following:

1. A reporting system has been established in which local and state agencies send copies of their regular reports to the Impact Information Center.
2. The local newspaper and other major newspapers within the state, are reviewed daily and a file of newspaper clippings relating to the community, the impacts of the pipeline, and energy resource development is maintained.
3. Regular market basket surveys, heating-oil cost surveys, and surveys of rental prices advertised in the local newspaper are conducted to establish economic indices. In addition, information obtained by the Bureau of Labor Statistics in its Anchorage Consumer Price Index is utilized. A major activity of the Impact Center and its Advisory Committee has been to encourage the reestablishment of a consumer price index in Fairbanks.
4. Utilizing the dockets from the State Superior Court, filed divorce complaints are recorded monthly, and information from previous years is being collected in order that a time series analysis may be possible.
5. Interviews are conducted with local persons to obtain information on a variety of subjects, and local institutions are visited and observed.
6. Public meetings and hearings are attended to obtain both information and public expressions of sentiments.
7. Formal questionnaires are used occasionally to obtain information on specific problems, (e.g., a survey of high school students to determine their roles within the workforce, a survey of Senior Citizens to ascertain their pipeline-related problems, and a survey of local pipeline-related workers to determine their child care needs and solutions).
8. Local university students are encouraged to study impact phenomena or to do mini-ethnographies in areas which relate to pipeline construction and/or impact phenomenon. Their work is supervised and coordinated through the Impact Center, and the Center acquires copies of completed papers.

9. Impact Center staff participate in local groups, give speeches at meetings of various organizations, are interviewed on radio and television talk shows, and participate in community activities in other ways which help to create a positive image and a sense of trust which facilitates an informal communications network.
10. As the Impact Information Center has become recognized as a community resource, persons in the community or elsewhere with questions, problems, or information contact the Impact Center either by telephone or going directly to the Center. Persons in the community provide information not only in terms of data, but also by alerting the staff to community concerns.

Research methods are flexible and strive for the integration of qualitative and quantitative data. The financial and political constraints on the Impact Center prohibit a large research team which could provide greater depth of information. However, the relatively small size of the community, and the unique vantage point provided by the research setting, enables the applied anthropologist to view the community in a holistic manner not often afforded urban anthropologists.

ROLE OF THE SOCIAL SCIENTIST

The Impact Information Center offers a unique research setting which provides the social scientist with validity, access to information, and a sense of purpose. This type of applied anthropology requires certain skills not often taught in graduate school. To function effectively in this type of nonacademic setting, a minimal level of proficiency is required in practical politics, which often runs counter to academic training.

In the interest of stimulating dialogue between applied social scientists, this paper offers suggestions based upon the author's experiences as an applied anthropologist working for local government in a relatively small, conservative community.

Fundamental to these recommendations is the fact of life that the position, (i.e. funding), for the applied anthropologist is subject to local control; and, therefore, local politics. Another fundamental premise is that the anthropologist's effectiveness is dependent upon his/her credibility and ability to communicate findings.

1. Consider every group and individual in the community as part of a "special interest group," whether or not it appears that they have the community interest at heart; rather than personal interests. To avoid community politics and gain general acceptance, it is important not to be identified with any single "special interest." This may be accomplished by balancing activities with some types of special interest groups with attentions to opposite types of interests. Types of special interest groups in the community might include business/economic; church/social activist; conservationists; academic/university; labor/union; and ethnic groups.

2. An advisory committee or board of directors composed of representatives of broadly-based segments of the community is vitally important. This gives the organization more credibility and distributes the responsibility for activities to people who are known and respected in the community. In order for an advisory board to be effective, it must include representatives of potentially critical organizations.

3. To maintain credibility, it is imperative to limit activities to disseminating documented information, to minimize interpretations, and to avoid projections. Based upon accurate information, others can draw conclusions, make predictions, suggest policy, and recommend planning. If the applied social scientist is asked to become involved in planning processes, it is best to offer several alternatives, explaining the positive and negative aspects of each. In other words, the social scientist does not become a political threat if he/she lets somebody else take responsibility for decision-making.

4. If the information is to be used, it must be presented in a clear and understandable manner. Information is more likely to be used when written narratives are kept to a minimum, and charts and graphs are employed whenever appropriate. Statistical analysis is difficult for many people to interpret and conceptualize. It is far more effective to present quantitative information using numbers and percentages. Social scientists who find this threatening to their sense of academic competence may prepare two reports: a detailed report for personal use and for people with specialized interest, and a more general and brief report for the public.

5. Vocabulary is exceedingly important. Words with neutral or positive connotations in academia can have negative connotations in other contexts. Try to understand community attitudes and political sensitivities, and select words which will not evoke hostilities. For example, I found that the words "research" and "study" send up red flags in this anti-intellectual community; whereas, the term "investigation" was acceptable. Similarly, I achieved greater acceptance by using the title "Information Officer" rather than "Research Associate."

In most cases the business/economic interests dominate politically. Explanations including concepts which are understood by the economic interests and which incorporate their values are more likely to be accepted. "Taxpayer's dollar" is a phrase which is used commonly by politicians, and can also be used effectively by social scientists.

6. You don't always have to be right. Try to avoid inaccuracies and mistakes; but, if somebody in the community accuses you of being wrong, don't become defensive. Remember:

- a. That person is becoming involved in the project--encourage his/her participation.
- b. That person is a source of information--seek the additional information he/she has to offer.
- c. Criticism from your advisory board gives them a raison d'etre - if you are always right, that means they are powerless.

- d. Your credibility is as much a function of process, as content--concentrate on developing strong relationships rather than strong arguments.
- e. Don't worry about being embarrassed by mistakes--it makes you human.

7. There are both academic and nonacademic approaches to accomplishing similar goals. For example, academic proposal-writing and grantsmanship is quite different from the means by which one obtains funds for nonacademic institutions.

8. Applied social scientists must become more media conscious. News media seek sensational stories and quotations, so it is necessary to learn how to use the news media without letting them abuse you.

9. Be aware of the hierarchy within your system. Keep administrative persons posted on your activities and consult with them on decision-making matters. Do not consider your project to be outside the system. It is possible to do this and still maintain a fair amount of autonomy.

Perhaps other applied social scientists can draw upon their own experiences to add to this list of suggestions.

SUMMARY

Forging a role for an applied anthropologist in a community-directed research setting is incredibly challenging. The Impact Information Center provides an exciting opportunity for research with continual sharing and evaluation on the part of the research population. Monitoring the effects of pipeline construction through the Impact Information Center may be considered the data-gathering stage of this research. Since the community prefers to utilize the data with a minimum of analysis and interpretation, the next phase of the research effort will probably take place in a different setting. The data-gathering stage is probably most useful to the local community; whereas, the synthesis, analysis, and interpretation will be more beneficial to the academic community, planners, and persons involved in social impact assessment.

Although this researcher is anxious to move into an analysis of the data, one or two years of data gathering is not unusual in social science research. What may be unusual is that the process of data gathering is as personally gratifying as it is in the Impact Information Center.

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SOCIAL IMPACT ASSESSMENT IN CROSS-CULTURAL PERSPECTIVE*

C. P. Wolf

1. Mohenjo-Daro: A Case Study of Environmental Management

One hundred sixty-seven miles north of Karachi lies the ruin of an ancient Indus civilization, Mohenjo-Daro. But that's ancient history, isn't it, at most of antiquarian interest. I have taught about it, in courses on the comparative sociology of civilizations, but that morning three days ago I was thinking of Mohenjo-Daro as a case in environmental management. Was it a failed case, of environmental mismanagement? We are at liberty to inspect the ruin. It has the appearance of a disorderly brickyard. What's interesting about that? Those bricks once sheltered life. Regard the bricks: they are hardened by firing, though not enough to resist seepage of river water. How were they fired? By deforestation. What was the effect of that? Erosion, silting and salinity.

That is one theory of the civilization's demise; there are others (see Wheeler 1968). The foreign invasion hypothesis places superior weapons of iron in the conquerors' hands. Mohenjo-Daro, a floodplain settlement, had none. But what made it an inviting conquest? Again, being situated on the floodplain, it must have endured severe flooding. Yet endure it did, for 2000 years of continuous occupation. An elaboration on the flooding theory has geological uplifting downstream forming temporary dams that impounded immense pools of backwater. Or climatic change, perhaps? But what would Mohenjo-Daro have been without the Indus? It would not have been at all, much less perhaps the first and foremost of ancient civilizations. This points to the ambivalence of natural landscapes, where to exploit natural advantage is to risk natural hazards (see White 1974).

*Revision of a paper presented to the International Conference on Management of the Environment, Karachi, Pakistan, 19 February 1975.

What, after all, is the moral of Mohenjo-Daro? Is it found in the irony of Shelly's lines:

I met a traveller from an antique land
Who said: Two vast and trunkless legs of
Stone
Stand in the desert . . .

And on the pedestal these words appear:
"My name is Ozymandias, king of kings:
Look on my works, ye Mighty, and
despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and
bare
The lone and level sands stretch far
away.

I will think upon it two days hence, beside Tarbela Dam.

2. Introduction

As you know, the United States has many qualified environmental scientists. So the composition of our delegation--both sociologists--may strike you as a bit odd. It wasn't planned that way, exactly, but it turned out that way. Professor Bean has already demonstrated the wisdom of his selection. I too shall try to suggest why social scientists are good people to have around on matters of environmental concern. My message is very simple. There is a newly emerging body of knowledge called "environmental sociology" that seems important to questions of environmental management because, fundamentally, problems of environment are human problems. Within that field, one distinct emphasis--"social impact assessment"--seems especially pertinent.

I am speaking then as an unofficial "Ambassador from Sociology," and social science more generally--an all-too-hidden continent of thought when considering the world environment and its management. It was John Ruskin, I believe, who greeted news of a transoceanic cable linking Britain and India with the aston-

ished reply: "But what have we to say to India?" We social scientists have perhaps more to learn than to say on environmental subjects. Yet the globalization of sociology in recent decades marks a turning point in world intellectual history, and it is only fitting that some of these intellectual resources be applied to global problems of environmental management.

I am speaking too as a citizen of the world. Two facts about "environment" are so obvious they bear repeating: (1) environment is international in scope, and (2) environmental studies are interdisciplinary in character. No parochialisms of discipline or nation can be allowed to obscure these facts.*

3. The Idea of "Environmental Management"

What social scientists can suggest is a reciprocity of human environment and human experience. It is the social environment which is our experience and expression. Environment is the carrier of human value; it is shaped to human purpose. The idea of "environmental management" symbolizes that environment is not something outside of humankind and its experience but rather the arena in which human aspirations are molded and human potentiality is realized. "Environmental quality" must therefore resolve to "quality of the human environment." Correspondingly, the aim and achievement of environmental management must be to enlarge and enhance the quality of life.

A good deal of the intellectual work required of social scientists at this point is to effectively formulate these "quality of life" criteria and to accurately gauge their indicators. Both are needed, to deepen conceptual meaning and refine operational measurement. There are questions of collective decision and

*Tarbela Dam, which Shami (n.d.: 20-22) would elevate as a symbol of national self-reliance, arose from the "engineering solution" former TVA Chairman David E. Lillenthal proposed to settle the dispute over Indus water division between

action that must be resolved in order to prevent recurrent "tragedies of the commons" (Hardin); this time on a global scale. (Indeed, it would appear that the devastating effects of Sahelian drought are as much due to overgrazing as to climatic variation.)

4. Environmental Sociology

These seeming commonplaces of environmental perception and evaluation are given new meaning by a growing body of interdisciplinary social science knowledge variously labeled "environment and behavior" or "man-environment relations." Within that broad domain is a newly emergent specialty, "environmental sociology," which addresses the intricate and inextricable relationship between human --that is, social--activity and its physical setting. Increasingly, the human environment is a "built environment," a social construction. What is "natural," to humans or environments, is a hoary question. (Negry 1962) and perhaps a pointless one. What seem essential are cultural perceptions, definitions, and values. "Environmental degradation" refers to a physical state of air, land and water quality, for example, but it is a social judgment of those "natural" conditions.

The corollary is that environmental quality has its human causes and consequences, and further, that by a process of mutual adjustment societies' environmental problems are reflections of their own natures. And because they co-exist in mutual adjustment, if not outright harmony, it is difficult to change one without changing the other. Hardest of all is to change both simultaneously. This "socialization" of environment does not imply or betray the anthropocentric notion--Niebuhr (1960) calls it "henotheism"--that because environment is avail-

India and Pakistan Its construction has been financed largely through the World Bank and multi- and bilateral grants and loans from half a dozen nations. Besides 15,000 Pakistanis, 500 workers from 24 countries are employed on the project. Technical expertise has been drawn from several major international consulting firms (Baker 1973: 8).

The range of these concerns is indicated in the draft "Statement of Purpose for an Environmental Sociology Section," appended.

able it is thereby disposable. As Catton (1975) recognizes, to think otherwise is both fallacious and fatal. The domination of nature (Leiss 1972) must extend to human nature as well (Skinner 1966).

The evolution of human society is a process of change from nature to culture as the basis of human activity. In effecting this change, technology has been the chief instrument of cultural intervention and control. One early example of cultural achievement is glimpsed in Lévi-Strauss' (1969) study, The Raw and the Cooked, which explores the mythology surrounding use of fire in food preparation. Through cooking, far wider niches of human adaptation were opened up, yielding to our species an evolutionary advantage it has never relinquished.

In the process of this great transformation, environment has been the recipient of the most advanced technological applications. There is a social component to this process, in the invention and diffusion of technological innovations and the social forms through which they are organized and applied. There is also a distinctive "social technology," of which one particular form -- "social impact assessment" (SIA) -- is assuming some importance for development planning in the industrially advanced societies. Countries less developed stand to benefit significantly by a transfer of this social technology.*

5. Social Impact Assessment

SIA is a quite recent development in the United States, and we are in the very early stages of thinking about how to do it, let alone putting it into widespread practice. The best way to explain the idea of SIA is by analogy with the more familiar practice of "environmental impact assessment" as

*On problems of the transfer of intellectual technology see however Streeten (1974).

required under the National Environmental Policy Act of 1969 (NEPA), whose purpose is to "encourage productive and enjoyable harmony between man and his environment and stimulate the health and welfare of man. . . ." NEPA further recognizes "the profound impact of man's activity on the inter-relations of all components of the natural environments" and prescribes the use of "all practicable means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of Americans." The means and measures cited, including those "which will insure that presently unquantified environmental amenities and values may be given appropriate consideration," entail an interdisciplinary approach "to insure the integrated use of natural and social sciences . . . in decision-making which may have an impact on man's environment." While distinctively "social" impacts have tended to be implicit, indirect and qualitative under these provisions, recent administrative regulations and legal interpretations have broadened and deepened the social content admissible and required (Savatsky 1974; Francis 1974).

An example closer to hand is found in the statement (Nasim, Mirza and Ahmed 1975: 2) that "The development and application of nuclear energy is one of the first major examples of determining environmental and public health issues well in advance of industrial application. . . ." Indeed, "anticipatory research" is the key to this analysis, not merely "evaluative research" after the fact of technological damage. We seek to learn what will happen to people in communities over the next 50 or 100 years with and without a planned intervention--a dam, a highway, a housing development, a sewerage treatment plant, a factory location, a nuclear reactor, and so on and on. Nor are "nonstructural" policies, programs and projects, such as a social security or a family

planning scheme, to be excluded from such analysis. These are surely among the most complex--and most important--questions of environmental management.

The methodology for conducting these studies is undergoing rapid development at present; doubtless it will draw on numerous established techniques of social research, such as demographic analysis, survey research and social network analysis, to name but a few. Also it will draw on less familiar techniques of futures research, such as societal trend analysis and cross-impact matrix methodologies and those of technology assessment as well. The general logic of the approach follows a series of assessment steps:

1. Social profiling--establishing base conditions from which to measure future change;
2. Profile projection over the expected life of the project--presently the weakest methodological point, except for population projections on a highly aggregate level;
3. "Assessment," or estimating the profile parameters under alternative plans; and
4. Impact evaluation, the assignment of positive or negative values to the various anticipated outcomes. One question here is: who benefits from and who pays for the plans under study.

After working through this procedure, we should arrive at a sounder basis for decision making and for mitigating those adverse impacts that cannot be avoided.

While SIA is now very much more of an art than a science (Wolf 1974), with increased experience it should provide a valuable planning tool. The rewards of effective planning should far outweigh the difficulties of analysis.

Why is analysis on this order of complexity required when unserved human needs, of health and housing, employment and education, appear so obvious? In the case of Pakistan, for instance, isn't anything done along these lines to be accounted as sheer gain? One answer is that while there are undoubted benefits there are also inescapable costs, and these must be optimized across the entire

range of development planning. Moreover, the incidence of benefits and disbenefits will not fall equally and equitably to all parties involved and persons affected. The criterion of social justice must not be ignored in the dissociation of costs and benefits, especially where redistributive effects are themselves planning objectives. Lastly, we know of many projects in which unanticipated consequences have vitiated or seriously compromised the value of well-intended plans. For all these reasons it seems both necessary and desirable for SIA to be consistently and conscientiously applied.

... in Cross-Cultural Perspective

Very well, but why the cross-cultural emphasis? Isn't this aspect of advanced planning more properly consigned to advanced industrial societies? I have tried to argue the universal validity of SIA. We have then, to demonstrate that validity, and to point out the utility of SIA for all who employ it. First, as to validity, we can simply indicate that advanced industrial societies themselves contain striking cultural differences which must be appreciated and respected in the planning process. I very well remember the almost frantic call I received from the Canadian Ministry of Transportation. It seems their building in Ottawa was besieged by Indians demanding fairer treatment; and wasn't there something I could send them about the special role of cultural minorities in planning for the public good? Again, our own American Indians are sitting on top of vast mineral and energy reserves they are not at all sure they want to see exploited at their expense.

These examples provide a kind of "internal validity" check on public programs that cut across many divisions of class, race and ethnicity. Much of our knowledge of these groups and their differences comes from anthropologists. In turn, much of their understanding derives from the study of non-Western peoples.

A large fraction of previous research, in applied anthropology, community development and cultural ecology, bears on this interest. To consolidate and expand this knowledge base, a sizeable number of American anthropologists have recently banded together to form a "Group on Social Impact of Environmental Modification."

There is another issue to be raised in consideration, however. A great deal of the technical assistance rendered throughout the world bears heavy social responsibility for the human consequences implied. For one example, the Energy Research and Development Administration (formerly a part of the U. S. Atomic Energy Commission) through its Office for International Programs is now implementing the agreement between President Ford and President Sadat to install a nuclear reactor in the United Arab Republic. Surely a responsible negotiation of this agreement demands attention to the social impacts of such an installation. Past results of foreign aid in that part of the world are hardly reassuring, in terms of environmental quality (Wade 1974) and political stability as well (Holden 1974). Assessments of the Aswan Dam remain incomplete, although Geiser's (1973) study of an earlier structure clearly indicates the symbolic dimension and the cohesive force of myth and ritual in societies experiencing rapid change. A respectable body of literature has been accumulating on water resource development elsewhere in Africa (FAO 1969; Rubin and Warren 1968; Brokensha 1963-64; Scudder 1968) and Southeastern Asia (Hannan 1968; Ingersoll 1972). Increasing research effort is now required for purposes of codification and systematic generalization of their findings, and for placing them in an operational context such as SIA provides.

7. Tarbela Dam Project: A Further Case in Point

It is within the borders of Pakistan itself that the largest of such undertakings is nearing completion. Tarbela Dam, in the Himalaya foothills some 40

miles northwest of Rawalpindi, is the largest rock and earth-fill dam in the world. A great many of Pakistan's hopes for future development are tied to its success; what power and water mean to a largely agricultural society can scarcely be exaggerated. What it means in human terms is no less impressive. Its reservoir will displace 80,000 people from about 100 villages (Baker 1973: 11). A massive resettlement program had succeeded in displacing only 10,000 by 1973, a year before scheduled filling to planned capacity. Tarbela Project Director Aman Ullah Kahn acknowledges,

This is the human problem we are facing. Whereas we are building this project for the benefit of humanity, for the development of the country, for the uplift of the economy, 80,000 human beings are being displaced. That is the sacrifice these people are making so that others can derive benefits.

Those people's attitude is: "Why us?" Even a generous compensation scheme will not restore the lost sense of place and disrupted way of life; some of those resettled have actually returned to former homes now threatened with inundation. The Project affords scant provision for unskilled employment, and while there is talk of building new townships around Tarbela reservoir, there is a noticeable lack of social planning, e.g. possible recreational development with at least seasonal employment opportunities.

Other questions intrude on the level of physical planning; water storage capacity is predicted to decline by 80% over the next sixty years, due to silting, though power production would continue unaffected. The next major project

Current figures place the number resettled at 71,720. Whatever the loss to agricultural productivity, delays in dam completion caused by partial collapse of two tunnels may have actually facilitated the human adjustment process.

Two hamlets have already been built at Ghazi on the left bank and at Pehur on the right bank where 4,000 people have been resettled. Khalabat Township near Haripur is completed. It will ultimately accommodate 30,000 affected persons. The townships will be equipped with all the basic amenities and facilities.

will be Kalabagh, 120 miles downstream. "Is there any way to prevent Tarbela from becoming obsolete in the next 60 years? Ask this question and you see a gleam come in the eyes of the engineers building Tarbela" (Baker 1973: 11).

"Of course," one of them said. "Tarbela can store 20 percent of the water in the river. The other 80 percent flows through. If we could somehow build four more Tarbelas, some of those upstream, we could control the river completely and offset the silt problem."

Upstream watershed management, reforestation and other measures could very well reduce siltation; on the demand side, USAID (1974) estimates that over 75% of irrigation water available now is lost through seepage, spills and inefficient management, resulting in further loss of acreage due to waterlogging. But no end of "engineering solutions" will adequately resolve the "human problems" of Tarbela Dam Project and its successors. What is required is assessment of their social impacts.*

8. Environmental Perception and Cultural Variation

~~It is to expose--~~not to suppress--cultural differences that we are attempting to view social impact assessment in cross-cultural perspective. If environment is global in its proportions, environmental perceptions and evaluations are culturally diverse. While the global environment should be assessed in global terms, applying universal standards of environmental quality, environmental and cultural differences are appreciable between and within world regions. Differences, even contradictions, may occur within a society as well. Japan presents the cultural paradox of high esthetic appreciation coupled with unprecedented environmental pollution.

The Government is also planning to set up some large industrial units at Khalabat . . . to provide sufficient means of employment to the affected people." I owe this and other information on Tarbela Dam Project to K. M. Parvez, Water and Power Development Authority (WAPDA) Public Relations Officer.

*Anthropological field studies at the site are presently being conducted under the direction of Hugh S. Plunkett.

The major division appears to fall between more and less industrially developed nations, the former's problem of environmental management being defined as pollution control and the latter's as housing provision, sanitation, nutrition and the like.* One illustrative case is the recent dispute over the UN's Earthwatch operations, the United States stressing environmental monitoring, e.g. via remote sensing, while other countries, especially African, urged priority for increasing stocks of urban housing. What "environment" means from these contrasting viewpoints is partly a matter of cultural experience and definition. In either case however the very perception of environmental problems is an encouraging sign, taking seriously Melko's (1972) suggestion that the course of civilizational advance is marked not by problem solution but by problem creation.

Main attitudes toward environment--exploitation, conservation and preservation--roughly correspond to stages of industrial development: early, mature and, most recently, postindustrialism. The attitude of early industrializers appears to be the total subjugation of nature at whatever cost, a mode of exploitation that now seems increasingly unviable. Mature industrialism has tempered that view by giving emphasis to environmental conservation. Postindustrialism underscores the need for preservation as well, recognizing that long-term human survival depends as much on environmental maintenance and enhancement as on resource exploitation.

Now if this is so, it seems evident for example that Pakistan's environmental management problems are not those of an advanced industrial society.** Of

*No sharp distinction is supported by these Conference proceedings; despite widely-shared concern for housing, health and sustenance, pollution has been a major preoccupation for all participants.

**Perversely enough, however, Pakistan has incurred some environmental problems of advanced societies, e.g. vehicular air and noise pollution, without having acquired the institutional and physical infrastructure to successfully engage them.

far greater concern are what Berry (1973) terms "the human consequences of urbanization." While it is true that since the industrial revolution, urbanization and industrialization in the West have proceeded more or less in parallel, perhaps it is a eurocentric bias to regard the former unaccompanied by the latter as "over-urbanization." The concept of "people pollution" or "superfluous people" rests on a single-valued logic of economic utility; there are more generous ways of conceiving human worth and richer criteria for its valuation. Nevertheless, it does seem necessary to attain some reasonable balance of people and resources, whatever the natural and cultural setting.

Attaining that balance poses something of a "developer's dilemma," of social equity and distributive justice--both supposed goals of the modernization process. As a development strategy, it may be preferable to maintain depressed levels of living for great masses of people while accumulating sufficient investment capital to eventually raise them--all the while having mobilized the mass support and social discipline to permit such development when "the long run" appears a luxury good of future-oriented, affluent societies. As Tiryakian (1967: 77) puts it:

It may be suggested that a fundamental dilemma of total societies in the modern setting is whether to opt for rapid economic development or rapid political development, the former being a centrifugal force, the latter a centripetal one. We would argue that they cannot be maximized simultaneously; the price of economic development is the erosion of social cohesion.

Another version of the "modernizer's dilemma" is bound up in the contradiction between national pride and cultural inferiority (Dore 1969: 433):

... the modernizer of a late-developing nation suffers from certain psychological disabilities. . . . In a world of competitive nation-states his modernizing zeal is likely to be highly correlated with--he himself is likely to claim that it is a function of--patriotism. And patriotism requires pride in country. So the admission that his country is backward which justifies his modernizing efforts has to be reconciled somehow with the defiant assertion that in some respects his country is superior. And the more wholesale the modernizing reforms his intelligence commends to him, the more difficult the reconciliation can become.

9. Environmental Management and World Politics

Can less developed countries learn the lessons of a modernization process that threatens global ecocatastrophy? In my view, it is greatly to be doubted.* In their search for wealth and power, we should rather expect a pattern of the repetition of Western errors and excesses. Indeed they will insist on it, as if it were their due. For the unpalatable alternative, in their view, would be a perpetuation of the manifestly unjust system of international stratification. The point of course is that environmental management and world politics do not easily mix. Just as population control is regarded by some ultranationalists as "genocide," pollution control may be denounced as "ecocide."

Environmental concerns of advanced industrial nations, such as ozone depletion by release of freon into the atmosphere, must appear esoteric, even frivolous, set beside hungry mouths. Moreover, what predominantly agricultural country is going to ban the use of DDT and other potent insecticides, as the United States has done, at the risk of widespread epidemics and famines? Any system of production, even the most primitive form of slash-and-burn agriculture, has environmental consequences. But there is some truth to the argument that the most insidious dangers, say toxic metals or radioactive contamination, come from the applications of high technology.

Rappoport (1971: 132) argues that ecological dominance on a global scale degrades local, more complexly adapted ecosystems, and "As man forces the ecosystems he dominates to be increasingly simple . . . their already limited autonomy is further diminished . . . the system's normal self-corrective capacity is diminished and eventually destroyed." Global "development" then becomes a

*In light of the Conference proceedings, I must retract this statement to the extent of doubting my doubts.

species of "ecological imperialism," undermining our biological viability and ultimately the global ecosystem as a whole.

It may not be improper to characterize as ecological imperialism the elaboration of a world organization that is centered in industrial societies and degrades the ecosystems of the agrarian societies it absorbs. Ecological imperialism is in some ways similar to economic imperialism. In both there is a flow of energy and material from the less organized system to the more organized one, and both may simply be different aspects of the same relation. Both may also be masked by the same euphemisms, among which "progress" and "development" are prominent.

Similarly, Robert Theobald has speculated that less developed countries are now better adapted to a world future of resource scarcity than are the industrially advanced ones, and that extinction of these cultural patterns and social practices would lead to a general impoverishment of the world's human resources and social capital.

As before, cultural differences in the world are present and real; differential environments have conditioned differential experiences, adaptations and histories. This social environment too deserves protection and preservation. Even "tolerated variability" will not suffice; beyond that we require the positive appreciation of difference--cultural diversity as well as cultural unity. Pressures for seizing development opportunity should not eradicate these differences of cultural heritage and natural habitat. In turn this implies that the system of international stratification should be transformed into one of international differentiation, with equal cultural prestige and economic reward allotted to all segments and sectors.

10. The Program

All of this talk is merely pious until translated into an active program of research.* The framework for such an effort already exists in the Unesco.

*Professor Bean would observe that even an "active program of research" is pious talk until translated into environmental policy and action.

Man and the Biosphere Programme, whose central focus is the investigation of ecosystem functioning and natural resource management under a variety of environmental conditions. While this program, at least in the United States,* has been deficient in respect to social science--in which it should be among the strongest--positive steps are being taken to remedy this condition. Project 10, "The Human Consequences of Large-Scale Engineering Works," presently occupies a low priority which I would like to see raised, for this is directly the concern of social impact assessment. To achieve this we are seeking international colleagues and inviting their initiative in framing cooperative research proposals for funding under PL-480 and other auspices. The UN's conference on Human Settlements, to be held in May/June 1976 in Vancouver, Canada, affords an early occasion on which to come together in the common interest. Plans are being formulated to hold a workshop on the topic of this paper under sponsorship of the Environmental Design Research Association, meeting in conjunction with the UN conference. It would be most appropriate for this event to attract strong international representation.

11. Conclusion

Remarks at the "ambassadorial" level are very like what Dr. Johnson complained of as "attitudinizing"; those at the programmatic level are scarcely any better. My American colleague, Professor Bean, has balanced them with some more substantive. Although there remain serious value questions to explore--of "material versus moral" in development ideology--for which we scarcely possess the vocabulary, there are also value commitments demanding immediate action. I hope to have offered one promising approach to engaging those concerns. While SIA is not yet an effective tool for environmental management, it has strong poten-

*A general survey is contained in Programme on Man and the Biosphere (MAB) Task Force on the Contribution of the Social Sciences to the MAB Programme (1974).

tial realizeable in the near term. And, like "environment," it is both interdisciplinary and international in character and scope. At least as much attention should be paid to the ends of human activity as to their means.

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ABSTRACT

This comprehensive, unannotated bibliography contains nearly 5,000 items covering literature in and related to the fields of anthropology, communications, economics, education, design, geography, history, human ecology, landscape architecture, management, planning, politics and government, population, psychology, public administration, recreation, social psychology and sociology. The emphasis is on literature that is substantively, methodologically or theoretically relevant to man and his activities in relationship to natural environments. The bibliography is listed alphabetically by author, with an extensive, crosslisted subject-by-title index under the following categories: Aesthetic, Humanistic, Literary, Religious, Philosophic/Agriculture, Food, Ranching, Rural/Air/Antropology/Attitudes, Behavior, Opinions, Motives Values, Perceptions, Cognitions, Knowledge, Psychology, Social Psychology/Built Environment-Natural Environment Interface, Including Urban Environment-Natural Environment Relations/Climate/Communications, Media/Conflicts, Controversy, Competition, Issues/Conservation, Conservation Movement/Economics, Business, Industry, Economic Growth and Development, Work, Occupations/Education/Energy, Minerals/Forests/General Ecology, General Environment, Social Ecology, Human Ecology, Eco-Systems/Geography, Regional Studies/Government, Public Agencies/History/International, Interstate, Intergovernmental, Interagency/Land/Law, Property Rights/Management, Policy, Decision Making, Planning, Development/Medicine, Health/Methodology, Evaluation, Measurement, Indicators, Systems Analysis, Cost-Benefit Techniques, Projections, Monitoring, Control, Standards, Performance Criteria, Theory, Concepts/Natural Disasters, Natural Hazards/Natural Resources, General/Noise/Place Names in Title/Politics/Pollution/Population, Demography, Migration, Crowding/Quality of Life, Affluence, Living Standards, General Environmental Quality/Readers, Conference Proceedings, Special Issues, Textbooks/Recreation, Leisure, Parks, Wilderness, Wildlife, Nature/Reference: Bibliographies, Data Sets, Catalogs, Directories, Literature Surveys and Reviews/Science, Technology/Sociology, Social Organization, Institutions, Culture, Society/Space, Spatial Behavior, Territoriality/Transportation/Voluntary Action, Voluntary Organizations, Citizen Participation, Social Movements/Waste/Water.

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NOTICE OF RESEARCH PROJECT

SUPPORTING AGENCY

AGENCY'S NUMBER(S)

U.S. DEPT. OF AGRICULTURE
COOPERATIVE STATE RES. SERVICE
MONTANA

0027044

MONB00452

TITLE OF PROJECT

SOCIAL CHANGE IN WATER RESOURCE DEVELOPMENT AREA: SOCIAL ASPECTS OF
CONSTRUCTION PHASE OF LIBBY DAM

PRINCIPAL INVESTIGATOR, INSTITUTE AND DEPARTMENT SPECIALLY

HT TURKCK SOCIOLOGY

PERFORMING ORGANIZATION

PERIOD FOR THIS NRP

MONTANA STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STA.
BOZEMAN, MONTANA 59715

7/73 TO 6/74 MULT. SUPPORT
FY74 FUNDS UNKNOWN

SUMMARY OF

OBJECTIVE: Investigate social relationship, recreational habits, pressures on community services, attitudes, organized opposition, occupational roles, physical characteristics and displaced persons in the Libby Dam area prior to, during, and after construction of the dam.

APPROACH: A sampling procedure will be used to obtain 200 old time residents and 200 newcomers to be interviewed each year. Subsamples will be taken for a case study approach. An intensive study will be made of service organizations during the period of rapid change. Measures of both tangible and intangible factors will be obtained for this area of rapid social change. Analysis of these data will provide information for future decisions on location of development projects, planning during early stage of such projects and will add to knowledge of rapid social changes and community development during such changes.

PROGRAM: Analysis is taking place on leadership in the three communities. Of critical importance is the perception of leadership by the larger community, the impact of the dam on leadership, the perception of the community problems in terms of how one perceives leadership and the control that absentee landlords such as the federal government and absentee corporations have over the area. The impact of absentee control becomes critical in understanding the role of leadership as well as the general idea of decision making in local communities or the county at large. The world of work, mobility, satisfaction with the area and life style are being analyzed to grasp a better understanding of what the resident of Lincoln County sees as the basis for satisfaction with the area and the implication of the area for his own life style. Such analysis becomes relevant when community development is an issue or future community growth becomes a focus for the community. Other analysis as mentioned in the first publication will take place with the completion of the above.

H.R. 3510: THE LAND USE AND RESOURCE CONSERVATION
ACT OF 1975

An important, indeed critical--piece of legislation is again before the Congress. Among the many compelling reasons for enacting a comprehensive land use planning bill is the realization that "decisions concerning key public facilities, large scale or regionally significant developments, and other land uses which have significant economic, social, and environmental implications are often made without regard to the long-term economic, environmental and social consequences or impact beyond the immediate jurisdiction," and that "significant land-use decisions are being made without adequate opportunity for members of the public to be informed about the impact of or the alternatives for such decisions, or to become involved in such decisions in meaningful ways."

H.R. 3510 seeks "to encourage and support the establishment by the States and Indian tribes of effective land use planning and management programs that assure adequate consideration of the environmental, social, and economic implications of major decisions as to the use of the Nation's land. . . ." From the standpoint of social impact assessment, the key provisions are:

Sec. 304(a): The State program shall include policies and procedures to consider the location of, and the environmental, social, and economic impacts of, large scale subdivision or development projects. . . .

Sec. 306: The State program shall include policies and procedures to consider the environmental, social, and economic impact of developments of regional impact.

Sec. 310(a): (The State program shall include) development of an adequate data base including methods for collecting, revising, exchanging and using geophysical, biological, demographic, economic, social, and environmental data.

Sec. 404(b): (In the development of land use plans, each agency head shall) (1) use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and social sciences.

Sec. 505: The Secretary (of the Interior) shall report biennially to the President and the Congress on land resources, uses of land, and current and emerging problems of land use. Such report shall include the Secretary's evaluation of the effectiveness of each State program for carrying out the policies of this Act, and shall include an assessment of the economic, social, and environmental costs imposed in each State by inappropriate use and development in areas of critical State concern, and the effects of land use controls on the rights of property owners.

AGENCY GUIDELINES FOR THE PREPARATION OF ENVIRONMENTAL IMPACT STATEMENTS

1. Department of Agriculture.

Environmental impacts. This requires analyses and descriptions of both the anticipated favorable and adverse impacts of the proposed action as it affects the environment.

The environment in this case includes both the ~~natural~~ environment and the social and economic environment. (Federal Register, 38, 222 (19 November 1973), 31937)

Identify, analyze, and discuss the full range of social, physical, and biological factors which change as a result of direct or indirect effects of the proposal. Examples of areas of environmental impact are: Air quality, weather modification, water quality, fish and wildlife, noise, radiation, hazardous substances, energy supply, land use, soil, plants, outdoor recreation, historic, architectural and archeological preservation, impacts on low-income populations, and employment.

Both primary and secondary consequences should be considered in the analysis. For example, the implications, if any, of the action on population distribution or concentration should be objectively estimated and an assessment made of the probable effects of such changes in population patterns upon the resource bases, including land use, and public services in the area in question. Include also, economic impacts on employment, unemployment, changes in local culture, social and other economic factors. (Federal Register, 38, 222 (19 November 1973), 31926)

2. Soil Conservation Service.

Both long- and short-range implications of a proposed action to man, his physical and social surroundings, and to nature are to be evaluated. (Federal Register, 38, 222 (19 November 1973), 31910)

... the degree of public interest, potential controversy, urban or rural setting, and economic and social impacts should be assessed. (p. 31912)

Secondary impacts such as socioeconomic effects as well as cumulative effects of other SCS and relevant actions in the area to be influenced are to be considered. (p. 31913)

3. Department of Transportation

The environmental impact statement process should be used to explore alternative actions that will avoid or minimize adverse impacts and to evaluate both the long and short term implications to man, his physical and social surroundings and to nature. (Federal Register, 38, 210 (1 November 1973), 30216)

Section 16(d) of the Airport Act establishes a requirement for the opportunity for a public hearing for consideration of economic, social, and environmental effects of airport projects. . . . (p. 30217)

Planning stage criteria for citizen involvement and identification of social, economic, and environmental impacts in Department planning programs are set forth in DOT 1130.2 Annual Unified Work Programs for Intermodal Planning, of 3-16-73. (p. 30218)

The interdisciplinary approach should not be limited to the preparation of the environmental impact statement, but should also be used in the early planning stages of the proposed action. Early application of such an approach should help assure a systematic evaluation of reasonable alternative courses of action and their potential social, economic, and environmental consequences. (p. 30219)

Impacts of the proposed action on the human environment involving community disruption and relocation. (1) The statement should include a description of probable impact sufficient to enable an understanding of the extent of the environmental and social impact of the project alternatives and to consider whether relocation problems can be properly handled. This would include the following information obtainable by visual inspection of the proposed affected area and from secondary sources and community sources when available.

(a) An estimate of the households to be displaced including the family characteristics (e.g., minorities, and income levels, tenure, the elderly, large families).

(b) Impact on the human environment of an action which divides or disrupts an established community, including, where pertinent, the effect of displacement on types of families and individuals affected, effect of streets cut off, separation of residences from community facilities, separation of residential areas.

(c) Impact on the neighborhood and housing to which relocation is likely to take place (e.g., lack of sufficient housing for large families, doubling up).

(d) An estimate of the businesses to be displaced, and the general effect of business dislocation on the economy of the community.

(e) A definition of relocation housing in the area and the ability to provide adequate relocation housing for the types of families to be displaced. (pp. 30224-25)

Other social impacts. The general social groups specially benefited or harmed by the proposed action should be identified in the statement, including the following:

(1) Particular effects of a proposal on the elderly, handicapped, non-drivers, transit dependent, or minorities should be described to the extent reasonably practicable.

(2) How the proposal will facilitate or inhibit their access to jobs, educational facilities, religious institutions, health and welfare services, recreational facilities, social and cultural facilities, pedestrian movement facilities, and public transit services. (p. 30225)

4. Department of Housing and Urban Development.

Environment is not defined in NEPA or in the CEQ Guidelines. However, it is clear from section 102 of the Act and elsewhere that the term is meant to be interpreted broadly to include physical, social, cultural, and aesthetic dimensions. Examples of environmental considerations are: air and water quality, erosion control, natural hazards, land use planning, site selection and design, subdivision development, conservation of flora and fauna, urban congestion, overcrowding, displacement and relocation resulting from public or private action or natural disaster, noise pollution, urban blight, code violations and building abandonment, urban sprawl, urban growth policy, preservation of cultural resources, including properties on the National Register of Historic Places, urban design and the quality of the built environment, the impact of the environment on people and their activities. (Federal Register, 38, 127 (18 July 1973), 19183.

Existing social environment (positive and negative aspects)

- a. Community facilities and services. Description (general description, location, responsible body, relation of capacity to existing demand) of school, park, recreational and cultural, police and fire and health facilities servicing the site and area.
- b. Employment centers and commercial facilities servicing the site and area.
- c. Character of community. Socioeconomic and racial characteristics.
- d. Other. Not included in above categories.

5. Environmental Protection Agency.

Primary impacts are those that can be attributed directly to the proposed action. If the action is a field experiment, materials introduced into the environment which might damage certain plant communities or wildlife species would be a primary impact. If the action involves construction of a facility, such as a sewage treatment works, an office building or a laboratory, the primary impacts of the action would include the environmental impacts related to construction and operation of the facility and land use changes at the facility site.

Secondary impacts are indirect or induced changes. If the action involves construction of a facility, the secondary impacts would include the environmental impacts related to:

(i) induced changes in the pattern of land use, population density and related effects on air and water quality or other natural resources;

(ii) increased growth at a faster rate than planned for or above the total level planned by the existing community.

A discussion of how socioeconomic activities and land use changes related to the proposed action conform or conflict with the goals and objectives of approved or proposed Federal, regional, State and local land use plans, policies and controls for the project area should be included in the EIS. If a conflict appears to be unresolved in the EIS, EPA should explain why it has decided to proceed without full reconciliation. (Environment Reporter, Supplement 250, 9 May 1975, p. 27)

6. Council on Environmental Quality.

Secondary or indirect, as well as primary or direct, consequences for the environment should be included in the analysis. Many major Federal actions, in particular those that involve the construction or licensing of infrastructure investments (e.g., highways, airports, sewer systems, water resource projects, etc.), stimulate or induce secondary effects in the form of associated investments and changed patterns of social and economic activities, or through changes in natural conditions, may often be even more substantial than the primary effects of the original action itself. For example, the effects of the proposed action on population and growth may be among the more significant secondary effects. Such population and growth impacts should be estimated if expected to be significant . . . and an assessment made of the effect of any possible change in population patterns or growth upon the resource base, including land use, water, and public services, of the area in question.

Agencies should also take care to identify, as appropriate, population and growth characteristics of the affected area and any population and growth assumptions used to justify the project or program or to determine secondary population and growth impacts resulting from the proposed action and its alternatives. . . . (Environment Reporter, Supplement 250, 9 May 1975, 12)

LOCKS AND DAM 26

In the case of Atchison, Topeka and Santa Fe Railway Company et al. v. Howard H. Callaway et al. (Civil Action Nos. 74-1190, 74-1191), District Judge Charles R. Richey in a Memorandum Opinion filed 6 September 1974, ". . . since the requirements of Section 122 and 209 are similar to those of NEPA, it is unnecessary at this stage in the proceedings to examine in depth the Plaintiff's allegations in this respect as this Court has found NEPA to have been violated." (p. 5) "In this respect" refers to allegations that the Coprs had "violated Section 122 of the Rivers and Harbors Act of 1970 by not examining possible adverse economic, environmental, and social effects of the project." This is the first case in which Section 122 has been at issue, directly or indirectly. It is a weak precedent, however, because Section 122 "analytic requirements" have been subsumed or assimilated to those of NEPA (in which the mandate for conducting social impact assessment is only implied). Moreover, in citing Section 122 the Plaintiffs specified their charge only on items pertaining to economic and environmental impacts; community well-being was faintly referred to at one point in passing, but then only as a secondary effect of economic deprivation. Now it is true that Section 122 has been held by the Corps to be consistent with NEPA and to extend it in desirable (social) respects, and also that NEPA furnishes an extremely broad base for establishing the legal standing of social impact assessment. Nevertheless, it cannot be said in this case that the "analytic requirements" of social impact assessment have been strongly asserted or contested.

STEPS of the PROCESS

Alan V. Galdis

I Introduction: Tell what's going to happen, why, what alternative strategies there are. Tell any factors which will constrain the report. Tell of any meetings, formal or informal, at which information was gathered, given, or exchanged.

II Profile * : Tell the pertinent geographical, economic, social and environmental aspects of the project area.

III First Enumeration
& Elimination:

Go thru the 17 stated categories ** to see which do and which do not apply. In this enumeration, the 17 stated categories are considered strictly according to the three headings of Social, Economic or Environmental. In later enumerations, inter-related categories will be considered if and where they exist.

IV Explication of
Alternatives:

List and explain the alternative project schemes.

V Second Enumeration:

Apply the remaining categories in terms of effects that these categories could have on alternatives (based on data & judgment). Include the "without project" (no action) condition here, and the initial "with project" conditions.

VI Addition of
Categories: Show any effect categories which are not specifically mentioned in guidelines and which could have effects (based on data & judgement).

VII Third Enumeration:

Apply all categories in terms of possible effects on alternatives (in terms of data & judgment).

VIII Addition and Elimination of Categories and/or alternatives on advice & consent of local interests (and C of E) 1/:

through formal contacts, delete agreed-upon categories and/or alternatives.

IX Final Enumeration 1/

Apply remaining categories to remaining alternatives (in terms of data & judgment).

This is the final "with project" step of the report.

X Consideration of Project Modification 1/:

In view of final enumeration, consider feasible project changes.

XI Recommendations 1/:

On basis of final enumeration and consideration of modifications, make recommendations.

XII Statement of Findings 1/:

In a concise and precise document, sum up pertinent points for preparation of EIS.

* Subheadings: Geography, Population, Education, Income, Employment, Housing, Zoning, Industry & Commerce, Environment.

** In some cases, the opposite condition may be of major concern.

1/ These steps hinge on the assumption that the project is accepted by and commented on by local interests. Without assurances of local support, and without statements of local preference, the last logical step in the ESE assessment process is Step VII.

Anthony Downs cites twenty-one specific types of losses that are imposed upon residential households, other than those losses resulting from paying the costs of construction itself. These twenty-two specific types of losses will be presented below (Downs, p. 192ff).

The Kinds of Losses Imposed Upon Residential Households
by Urban Highway and Urban Renewal Projects
(Other than Construction Costs)

- A. Losses imposed upon residential households by displacement itself:
 - 1. Disruption of established personal and other relationships
 - 2. Losses due to the taking of real property
 - 3. Losses due to home financing arrangements, especially contract buying
 - 4. Costs of seeking alternative housing elsewhere
 - 5. Costs of paying for alternative housing elsewhere
 - 6. Moving costs
 - 7. Higher operating costs of residing elsewhere
- B. Losses imposed upon residential households by uncertainties and delays:
 - 8. Deterioration in the quality of life during waiting periods
 - 9. Inability of property owners to sell property at reasonable prices during waiting periods
 - 10. Declines in the value of properties during waiting periods because of neighborhood and individual property deterioration
 - 11. Losses of income suffered by owners of rental property because of the departure of tenants before actual taking occurs
 - 12. Costs of maintaining property after its fair market value has been established for purposes of litigation
- C. Losses imposed upon residential households not directly displaced but located in surrounding areas:
 - 13. Higher taxes paid because of increased city costs of counteract vandalism and other deterioration in the area
 - 14. Disruption of local communications through the blocking of streets
 - 15. Reduction in the quantity and quality of commercial and other services available in the area because they have left or been displaced
 - 16. Reduction in employment opportunities and increased costs of travelling to work because firms have been compelled to move elsewhere or have gone out of business
 - 17. Spillover effects of deterioration in the clearance areas during the waiting periods
 - 18. Higher rents or housing prices because of increased competition for housing among low-income households resulting from displacement
 - 19. Reduction in the efficiency of community facilities through:
 - a. Loss of patronage if displacement has removed customers
 - b. Overcrowding if displacement has removed alternative source of supply (such as a local school, parks, playgrounds, etc.)
 - 20. Losses in property values due to changes in the accessibility of various parts of the metropolitan area
 - 21. Losses resulting from congestion, vibration, noise, street blockage, dust, and other negative factors involved in the process of constructing the new highway or urban renewal project
 - 22. Losses in property values due to increased ugliness, noise, air pollution, or other adverse effects of the completed highway or urban renewal project

I. Losses resulting directly from displacement.

1. Disruption of established relationships. Earlier in this paper we recognized the importance of the neighborhood itself where many hours of established relationships with other persons, places, and businesses are very important for the people. Beyond the family ties and friendships with others living nearby, credit relationships with stores and banks and habitual patterns of social and commercial intercourse are also important. Valuable social interactions which can be lost when relocated. Much time and energy has been invested in these relationships and must be destroyed in most cases, after relocation, to establish new ones. The establishment of credit is not insignificant for most low income persons. A difficulty like this is seldom considered in relocation.

2. Real Property Removal. The owners of parcels of land in an area that is being considered for construction of public projects, are compensated by what is called a fair market value. Many times the residents lose greatly by this fair market value because they cannot replace the value of their property that they are selling. The fair market value is defined as what a willing buyer would pay a willing seller under current market conditions, if neither was under any compulsion to complete a transaction. Most often the seller cannot purchase equitable property with the fair market price.

3. Losses due to Home Financing Arrangements. Many low income neighborhoods have households which have been purchased through contract financing. Under this method the occupant normally purchases a property at a contract price. This price, usually far above fair market value, has been inflated as a compensation to the seller for accepting a very low down payment and for dealing with a buyer whose credit standing is inadequate for obtaining a normal mortgage loan. Many complications and losses can occur to the residents, because of these types of arrangements and lack of compensation from the government for these.

4. Costs of Seeking Other Home. Just the task of looking for another place to live involves a great investment of time and money. (This is especially true if one is forced to look during working hours.) Purchase of the new home is one of the largest costs to those who must relocate. Because in reality it is almost impossible for residents from low income neighborhoods to find alternative housing at the same low sum they received from the government. Nor can they usually pay the same rent they formerly paid. We are reminded that these costs are of a greater burden to those who are Black, those who are of old age, those who are on fixed incomes, those who are disabled in any way, and those who live in low income neighborhoods where the fair market value does not bring an equal compensation of value per place in a different neighborhood. This is particularly difficult in a time of inflation when construction costs and housing costs in general have been rising very rapidly. It should also be noted that a growing area, such as Lexington, also makes for scarcity of housing, which inflates the price of houses. Lexington not only has a shortage of low income housing but of most housing ranges. The recent report from Spindletop Research indicates the lack of low income housing in the Lexington area, and pinpoints the Georgetown area as one of the specific areas of scarcity. Both home owners and renters, after relocation, generally pay much more of their income for housing. A study of over 2100 relocated households conducted by the Census Bureau showed that a majority of rent paying households paid higher rents after displacement than before. Moreover the fraction of their incomes devoted to rents rose, with the median shifting from 25.1% to 27.7%. The proportion of rented households paying over 20% of their incomes for rent rose from 67% to 76% (Downs, p. 198).

6. **Moving Costs.** A public works committee report showed that less than 50% of all households and individuals displaced per year by all federally related programs received payments for moving costs. Although all people actually incurred moving costs, less than 50% received any government compensation for such costs. Also the average size of payment when made to displaced families or individuals, often times does not meet the actual costs of moving.

7. **Higher Operating Costs of Another Home.** Living expenses many times are greater in the new neighborhoods where the residences have moved than in their old neighborhoods. This includes things like increased commuting costs to work, greater heating bills, higher property taxes, and general operating costs for the home itself.

II. Losses Due to Related Uncertainty and Delays

Since there is always a time lapse between the initiation of a project and the completion, this means that there will be time delays in relocating the people and constructing the highway and people finding their new neighborhoods. During the entire lapse of time from initial discussion to the actual construction of the project, the area and the people in it are strongly affected by both the possibility and the actuality of future clearance.

8. **Deterioration of the Quality of Neighborhood Life.** Once a project has been announced, many owners of both residences and businesses are reluctant to make any improvements in their property; therefore, dilapidation occurs. Vacancies also result from people moving out before actual relocation procedures are begun. Such departures create not only vacancies, but also encourage vandalism and crime. Colburn noted that in a Boston location from the West End, truancy increased and teenage hangouts developed. A greater occurrence of vandalism and crime was also detected in this area.

9. **Inability of Owners to Sell at Reasonable Prices.** During the interim period before construction actually begins or during construction before relocation has begun, anyone wishing to move often cannot receive fair market value for his property. If one is forced to move because of work, he usually receives a lower compensation and does not become eligible for compensation that would be due to him had he remained until the government had begun compensation.

10. **Interim Declines in Property Value.** For reasons discussed above, property values may actually decline in an area before the court takes action to actually purchase the property. The date at which the court takes action is the date of the fair market value of the house. If there has been an interim decline in property values these people are not compensated for the depressed value that has occurred since the announcement of the proposed project. Although some owners look forward to the government buying their dilapidated and deteriorating property, these are usually absentee landlords, who are reasonably well off economically, and see the government as relieving them of property of which they are glad to be rid.

11. **Losses of Rental Income.** After the announcement of the project, many renters find other property immediately and leave the owners of the rental property without tenants, since some people are unwilling to move into an area where construction of a highway is being considered. It should also be noted that maintenance costs are higher due to vandalism, crime, and general deteriorating of surrounding properties.

12. **Costs of Maintaining the Property after Appraisal.** In some cases several months may elapse between the actual appraisal and the legal action which finally takes the property. During this interim, owners may sometimes make certain vital repairs which then do not appear in appraised value and for which there will be no adequate compensation.

III. **Indirect Losses Imposed Upon Households and Surrounding Areas.** The highway not only affects those persons which are relocated and displaced, but it has many effects upon those persons living or owning their own property, in the nearby neighborhood. Below are some of those losses which can be incurred by these people.

13. **Higher Taxes Because of Greater Local Government Cost.** If greater government costs are incurred in the area because of dilapidation, vandalism, increased police protection, greater sanitation costs, etc., these costs might possibly be passed on to those left in the neighborhood. One possibility is an increase in property taxes.

14. **Disruption of Local Communications and Traffic.** Construction of almost any highway normally blocks movement on a large number of local streets and causes general disruption of the neighborhood. These consequences decrease convenience in movement for local residents and others passing through. It will probably be of greater inconvenience to the people in the local neighborhood than it will be to the people who will actually use the highway, after it is constructed.

15. **Reduction in Quantity and Quality of Local Services.** The construction of the highway might present such adverse conditions during its construction that many establishments will move out of the area and others refuse to move in, which possibly will cause a further deterioration in the quality of the neighborhood. The reduction of such establishments decreases the choice available to the remaining residents. The quality of the neighborhood is further reduced by the elimination of such facilities as parks, especially where the community uses the parks for recreation, for leisure activities, or just a place to get away from it all. For many of these areas the only green space left is in a park. These are some of the kinds of losses for which no compensation can be made. By eliminating a great part of Douglas Park, the Georgetown citizens, particularly the elderly and the teenagers, would incur great losses for which there is no compensation.

16. **Reduction in Employment Opportunities and Increased Commuting Costs.** Whenever commercial, government, industrial, or other employment providing installations are displaced, persons who formerly worked in such places are compelled to become unemployed or to travel farther to available jobs. Although most displaced establishments providing much employment locate elsewhere, many small retail establishments, once moved out of an area like this, are never reopened elsewhere. Studies indicate that this percentage can run as high as 40% and usually exceeds 20% (Hartman, p. 329).

17. **Impact on the Areas Outside the Clearance Area.** This is especially significant when a highway is being constructed. It can bring with it deterioration of the surrounding neighborhood and all the ramifications of deterioration. We should also draw special attention to the fact that the highway as proposed would be constructed very near the new school in Douglas Park. This will bring additional danger to students. School children must walk near the highway to and from school. Also the school is in such close proximity that the highway probably presents danger to students in the area or at school, itself.

18. **Increased Competition for Low Cost Housing.** As noted earlier, when low cost dwelling units are eliminated this increases the competition for the remaining low cost dwelling units, which can mean an increase in price for those who are already unable to pay higher cost for housing. It can also increase density in already densely settled urban areas. As noted earlier this affects the Black population even greater than the population generally, because they do not have as open a housing market as the general population. An elimination of some housing units for Blacks create an even tighter housing market than before. It seems that the housing situation of low income households has become worse rather than better in the past few years: (1) because fewer low income housing units are being built; (2) but also because fewer housing units as a whole have been built, which results in fewer houses filtering down to low income peoples. The general inflation of construction costs, and the higher rates of interest have contributed to the lack of new housing being built, although there is a greater demand because of the new prosperity.

19. **Reduced Efficiency of Community Facilities Serving Surrounding Areas.** Stores, churches, schools, parks and other facilities near the clearance areas can sometimes be forced into a less efficient operation by the demolition of residences and creation of new projects. If we include the parks as facilities, we can see that the demise of part of Douglas Park would reduce its utility to the people in the neighborhood, but it also could provide over-crowding to other parks in the areas that are serving Black populations.

20. **Changes in Relative Accessibility.** The purpose of a major highway is to improve the mobility of a large number of persons within the metropolitan area. Any alteration of the relative accessibility of different parts of the metropolitan area have a concomitant change in property values. Where interchanges make accessibility greater, values tend to rise. But on the opposite side, other sights can fall just as sharply in property value when accessibility is closed off from the highways. These losses occur in all areas where the highway is not accessible. By re-routing traffic away from areas which normally have had traffic, losses can occur in places not even near the neighborhoods to which the highway now runs.

21. **Losses Resulting from a Process of Construction.** During the construction of a highway, local traffic is impeded both by added congestion and the blocking of movement due to this construction. The local government has to pay increased costs for traffic control and for the creation of alternate access paths. Businesses on surrounding streets often times lose sales, because access to the property is diminished and traffic congestion discourages patronage. Also, noise and vibration associated with construction may disrupt productive processes and generally lower the quality of the environment. No compensation is generally made for these losses, even when they are substantial.

22. **Losses Resulting from Adverse Environmental Changes.** During the construction of the highway, and after the highway is constructed, the neighborhood has additional highway noise, more air pollution from exhaust fumes, the glare of lights at night, increased congestion in the neighborhood, and a greater possibility of danger to children and other pedestrians, because of the increased traffic congestion on the highway. These are additional costs for which there are no compensation to those people who must remain in the area once the highway is constructed.

SOCIAL IMPACT REPORT EVALUATION GUIDELINE

Ed Bryan

This guideline is designed to assist city planners and other agencies who are interested in assessing how changes in the urban environment will effect the lives of the citizens in that environment. It is intended to help the analyst determine how any environment change will alter the patterns of social movements, activities and interactions of the community's residents.

This guideline has been put in outline form so that the various social aspects of the community can more readily be recognized and assessed. Each aspect should be considered as a dependent variable that can be effected, to one degree or another, by any environmental change.

The outline is divided into two parts. The first is designed to describe the effected area as it presently exists. The second part is intended to describe the proposed change and to assess the effect of same.

Description of the Existing Community

I. Population distribution within the community

(This is essentially demographic data, some of which may be obtained from the bureau of the census. Its purpose is to give the analyst a picture of the various types of people living within the community.)

A. Age Distribution

1. Age range and ratios:

The analyst should try to determine the range of ages appearing in the community and the percentage of residents which appear in each age group.

2. Residence Distribution:

Ignoring the effect of the wide age ranges present in family groups, the analyst should determine if housing patterns are homogeneous or heterogeneous as to age.

B. Ethnic Distribution

1. Demographic analysis:

The analyst should determine the variety of ethnic groups who reside within the effected area and the proportion of each ethnic group to the community as a whole.

2. Residence Distribution:

The analyst should discover whether housing areas tend to be ethnically defined and whether ethnically homogeneous areas are voluntarily created by the residents or are the result of outside social pressures.

3. Ethnic Friction Analysis:

Previous ethnic conflicts should be analyzed and the possibility of future ethnic conflicts should be taken into account by the analyst.

C. Socio-Economic Analysis

1. Income and education range and ratio analysis:

The community should be analyzed to determine the various educational and income levels present within the community.

2. Socio-economic residency patterns:

Residency patterns should be analyzed to determine how housing is stratified along status and/or income lines.

D. Family Composition Analysis

1. Demographic analysis:

The analyst should try to determine the percentage of his community made up by family groups: the number of adults living within family groups as opposed to the number of children: the age range of the children within the community: the number of one parent households and the number of households where both parents work.

2. Residency Patterns:

The analyst should determine both the homogeneity of heterogeneity of family group housing, as well as the primary type of housing, whether single or multiple family dwellings.

E. Population Density Analysis

1. The degree of population density within the area should be determined. This should include residential use density, recreational and service use density, and commercial use density.

2. The amount of undeveloped land within the community should be assessed.

F. Population Stability Analysis

1. The degree of population mobility in the community should be determined. In and out migration patterns will be analyzed.

II. Occupational Profile Analysis

A. The Structure and Character of the Work Force

1. Skills Profile: Skills, occupations and educational levels of community members will be noted.

B. Geographic Distribution of the Work Force

1. Patterns of occupational mobility and the ratio of inter-community job holders to extra community job holders will be examined.

C. Occupational Need-Assessment

1. Unemployment and underemployment data will be correlated to population data already acquired. The ratio of employed to non-employed within the community will be determined.

III Transportation Pattern Analyses

A. Private Transportation Use Analysis

1. Number of cars per household.
2. Estimate of degree and type of private use, eg., employment, household.

B. Public Transportation Use Analysis

1. Percentage of community members who use public transportation
2. Demographic and area analysis of public transportation use.

C. Traffic Patterns

1. Investigate the factors of congestion, parking availability that affect the community in private and public transportation.

IV. Community Service Analysis

(The variety, capacity, availability of services and the ratio of facilities to the population in the impacted area will be determined)

1. Public Services

- a. Variety, capacity of agencies (police, medical, fire departments, park and recreational, public social services--welfare, senior citizens)

2. The Private Sector

- a. Variety and capacity of commercial services.

3. Social Function Need Assessment

- a. Need and duplication of service analysis

THE PROPOSAL AND ITS EFFECTS ON THE EXISTING COMMUNITY

I The Project Under Consideration:

The proposal should be described in detail. Of particular interest is an analysis of fiscal ramifications (eg. tax revenues realized or expended) Note Short Term and Long Term Effects.

II Population Distribution Factors:

- A. Will displacement result?
- B. Will distribution ratios be altered? (age, ethnic, socio-economic, family composition)
- C. Will ethnic solidarity be influenced?
- D. Will population density and migration patterns be altered?

III Economic and Occupational Impact

- A. Will patterns of occupational mobility be altered? Increase or decrease in persons commuting to work?
- B. Will the structure and character of the work force be altered? Will jobs created by the proposal meet the needs and skills of community members?
- C. Will underemployment and unemployment rates be altered?
- D. Will the distribution of real income be altered?
- E. Tax Structure analysis: Will the tax system (federal, state, county, local) be altered? Will the project increase or decrease tax expenditures?

IV Transportation Pattern Analysis

A. Private transportation

- 1. Will transportation use patterns of private vehicles be altered?
- 2. Will there be an increase or decrease of private vehicles?

B. Public transportation

- 1. Will the variety of public transportation be increased, decreased, or alleviated?
- 2. Will the distribution of community members who use public transportation be altered?
- 3. What is the effect of increase in public transportation in traffic congestion and use?

G. Traffic patterns

Will the alteration of transportation effect congestion, parking availability and physical apparatus in the community?

V. Community Services Import Analysis

- A. Will the project increase or decrease demand for public and private services?
- B. Public Services - can public services absorb increased demand within present budget structure? Will new tax support be necessary? (police, fire, medical, park and recreation)
- C. Private Sector - Does the proposal duplicate social and economic services existing in community? Are present commercial resources sufficient to meet increased need?

VI. Long Term Detrimental Effects

- A. Describe long term effects of the proposal that are detrimental to the health and viability of the community.
- B. Describe alternatives in the proposal to mitigate long term detrimental effects.

PUBLIC OPINION FEEDBACK

- I. Sampling - representative public opinion
- II. Identification and interviewing of interested parties and groups who will gain or lose by the project
- III. Mass-media information system.

Key Social Indicators

Deshaies, Kopper and Siker (1971)

Socioeconomic Status

1. Education

- a. *Median educational attainment of household head.*
- b. *Grammar school education or less* — Percent of population over 18 years of age with 8th grade or less of school attendance.
- c. *Less than high school education* — Percent of population over 21 years of age with less than a high school education.
- d. *College education* — Percent of population over 25 years of age with a baccalaureate degree and/or advanced degrees.
- e. *Professional education* — Percent of population over 29 years of age with a masters, doctorate, or other advanced degrees.

2. Income

- a. *Median family income.*
- b. *Relief income* — Percent of families receiving some relief income.
- c. *Income level less than \$1,000* — Percent of families with income less than \$1,000.
- d. *Income level less than \$2,000* — Percent of families with income less than \$2,000.
- e. *Income level less than \$3,000* — Percent of families with income less than \$3,000.
- f. *Income level less than \$4,000* — Percent of families with income less than \$4,000.

g. *Income level less than \$5,000* — Percent of families with income less than \$5,000.

h. *Income level between \$5,000-\$10,000* — Percent of families with income \$5,000 to \$10,000.

i. *Income level greater than \$10,000* — Percent of families with income greater than \$10,000.

3. Housing

- a. *Overcrowding index* — Percent of occupied housing units having 1.01 or more persons per room.
- b. *Substandard housing index* — Percent of housing units that either lack a complete bathroom for exclusive use or that have a combination of two of the following: Low value or rent, inadequate heating, no complete kitchen for exclusive use.
- c. *Low rent index* — Percent of renter-occupied housing units with a contract monthly rent of less than \$80. (no cash rent included in the less than \$80 group).
- d. *Low owner-occupied housing value* — Percent of owner-occupied housing units in one-family structure with a value of less than \$12,500.
- e. *Older housing* — Percent of population residing in houses built before 1950.

4. Social Organization

- a. *Normal family life index* — Percent of children under 18 years of age living with both parents. This indicator is a measure of stable family organization.

b. *Marital unrest index* — Ratio of divorced and separated persons to now married persons — measure of family disorganization.

c. *Matriarchy index* — Percent of household heads that are female heads with own children — measure of family disorganization.

5. Occupation and Employment

a. *Low status occupation* — Percent of employed males in unskilled, semiskilled, or service occupations.

b. *Under-employment* — Percent of employed males working less than 30 hours per week.

c. *Unemployment, male* — Ratio of unemployed males over employed males $\times 1,000$.

d. *Married female employment* — Percent of married women employed and working more than 30 hours per week.

e. *High-status occupation* — Percent of employed males with professional or managerial positions.

Socioeconomic Status Composite Indicator (incorporates 1 through 5 above)

6. Material Indicators

a. *Automobile ownership — negative* — Percent of household who do not own an automobile.

b. *Multiple automobile ownership* — Percent of households with more than two people, having two or more automobiles.

c. *T.V. ownership — negative* — Percent of households not owning a television.

Maternal and Child Health Data

1. Fertility

a. *High fecundity* — Percent of women with three or more own children.

b. *Childless women* — Percent of women married more than 2 years who have no own children.

c. *General fertility rate* — Births per 1,000 females in age interval 15 to 44.

d. *Nuptial birth rate* — Legitimate births per 1,000 married females.

e. *Gross reproduction rate* — Female births to mothers of ages 15 to 44 per 1,000 females of ages 15 to 44. (Replacement formula.)

f. *Nonwhite fertility* — Number of births to non-white females.

g. *White fertility rate* — Number of births occurring to white females.

h. *High birth order* — Percent of births representing a birth order of four or more children.

i. *Births at Yale-New Haven Hospital* — Percent of total live births occurring at Yale-New Haven Hospital.

j. *Births at Hospital of St. Raphael* — Percent of total live births occurring at Hospital of St. Raphael.

2. Family Planning

a. *Childbearing expectations* — Percent of married females between the ages of 14 to 44 who expect one or more additional children.

b. *No childbearing expectation — high fertility areas* — Percent of married females between the ages of 14 to 34 not expecting any additional children.

c. *No childbearing expectation — general* — Percent of married females between the ages of 14 to 44 not expecting additional children.

3. Pregnancy Outcome

a. *Low birth weight* — Percent of live births with birth weight $5\frac{1}{2}$ pounds or less.

b. *Optimum birth weight* — Percent of live births with baby weight 6 pounds 10 ounces to 9 pounds 14 ounces.

c. *Successful pregnancy* — Percent of total pregnancies resulting in live births.

- d. *Poor gestation* — Percent of live births with a gestation period of 35 weeks or less
- e. *Infant mortality* — Percent of live born babies who died within 1 year.
- f. *Perinatal* — Percent of total live and stillborn births which were either stillborn or the infant died within 28 days after birth.
- g. *Toxemia or pregnancy disorders* — Percent of mothers in Yale-New Haven Hospital who had toxemia or other pregnancy disorders.
- h. *Pregnancy complications* — Percent of mothers in Yale-New Haven Hospital who experienced pregnancy complications.
- i. *Infant diseases* — Percent of babies born who experienced postnatal diseases.
- j. *Type of delivery* — Percent of deliveries spontaneous, operative, and neonatal, premature, immature, abortive, and/or died undelivered.

4. Prenatal Care

- a. *Prenatal visits - negative* — Percent of mothers in Yale-New Haven Hospital who did not visit a doctor prior to entering the hospital
- b. *Prenatal visits - positive* — Percent of mothers in Yale-New Haven Hospital who had made seven or more prenatal visits
- c. *Pregnancy trimester of prenatal visits* — Related to number of visits
- d. *Service status while in hospital* — Percent of maternity cases in wards and/or private rooms.

5. Characteristics of Mother

- a. *Parity* — Mean number of previous live births.
- b. *Age of mother at birth* — Mean age of mother at birth.
- c. *Catholic mothers* — Percent of mothers in Yale-New Haven Hospital who reported being Catholic

d. *Jewish mothers* — Percent of mothers in Yale-New Haven Hospital who reported being Jewish.

e. *Protestant mothers* — Percent of mothers in Yale-New Haven Hospital who reported being Protestant.

f. *Nonwhite* — Percent of mothers in Yale-New Haven Hospital who were nonwhite.

g. *Under-age mothers* — Percent of live births occurring to mothers under 18 years of age.

h. *High-risk pregnancy ages* — Percent of live births occurring to mothers under 20 and over 34 years of age.

6. Child Day Care and Life Cycles

a. *Working mothers - preschool children* — Percent of working mothers with children less than 6 years of age.

b. *Working mothers - school children* — Percent of working mothers who have own children ages 6 to 17.

c. *Child care index* — Percent of mothers with children under 13 years of age who take care of their own children and who do not work.

d. *Child rearing index* — Percent of household heads with own children under 14 years of age.

e. *Preschool index* — Percent of household heads with own children under 6 years of age.

f. *Minor population* — Percent of population under 21 years of age.

g. *Children indicator* — Percent of population under 18 years of age.

7. Illegitimacy

a. *Illegitimate birth rate* — Illegitimate births per 1,000 unmarried females in age interval 15 to 44.

- b. *Unmarried mothers* — Percent of mothers in Yale-New Haven Hospital who were unmarried.
- c. *Age of mother bearing illegitimate child.*

Health Data

1. Health Resources Utilization

- a. *Lack of health insurance coverage* — Percent of population not covered by health insurance.
- b. *Head of household not covered by health insurance* — Percent of household heads not covered by health insurance.
- c. *Routine physical examination — positive* — Percent of population receiving a routine physical examination by a doctor within the last 12 months.
- d. *Routine physical examination — negative* — Percent of population not receiving a routine physical examination by a doctor within the last 12 months.
- e. *Routine physical examination of children — positive* — Percent of children under 18 years of age receiving routine physical examination by a doctor within the last 12 months.
- f. *Routine physical examination of children — negative* — Percent of children under 18 not receiving routine physical examination within the last 12 months.
- g. *Dental examination—population* — Percent of population over 7 years of age visiting the dentist for routine dental care.
- h. *Dental examination — school children* — Percent of children between 7 and 17 years of age visiting the dentist for routine dental care.
- i. *Hospital visits* — Percent of population visiting hospital emergency rooms or clinics as a result of an immediate health problem.
- j. *Hospital visits — Yale-New Haven Hospital* — Percent of population visiting the Yale-New

Haven Hospital emergency room or outpatient clinic.

- k. *Hospital visits — Hospital of St. Raphael* — Percent of population visiting Hospital of St. Raphael emergency room or outpatient clinic.

2. Health Status

- a. *Morbidity index* — Percent of population reporting a chronic acute health problem.
- b. *Activity restrictions* — Percent of population reporting frequent or complete limitation of normal activity because of a health problem or disability.
- c. *Activity Restrictions — head of household or wife* — Percent of households where the head and/or wife reported frequent or complete limitation of normal activity because of a health problem or disability.
- d. *Elderly population restricted* — Percent of population 65 years of age or over reporting frequent or complete limitation of normal activity because of a health problem or disability.

Migration

- a. *Nonmigrant index* — Percent of population over 5 years of age living in the same house for 5 or more years.
- b. *Interstate migrants* — Percent of population born outside Connecticut.
- c. *Ethnicity* — Percent of population with one or both parents foreign-born.

Descriptive Indicators

- a. *Racial composition, Negro and other minority races* — Proportion of the population that is Negro or other minority race.
- b. *Child rearing completed (or no child rearing)* — Percent of married couples with husband over 45 years of age with no own children under 18 years of age.

Elderly population — Percent of population 65 years or older.

Median age of household head.

Average household size — Mean number of persons in household.

Dependency rate — The number of persons

under 18 years of age or over 64 years of age per 1,000 persons.

g. *Age distribution of population* (17 groupings).

h. *Age distribution of female population* (13 groupings).

i. *Age distribution of female population married* (13 groupings).

EVALUATION

Evaluation of urban water resources plans will be accomplished by comparing the impacts of the alternative plans with the water resource planning objectives and the regional problems, concerns, and issues that the planning effort was directed to achieve. (Planning Division 1973: 3-9&10)

Whereas impact assessment involves identifying and measuring the changes associated with each of the alternative plans, evaluation is the process through which values are ascribed to these changes. Evaluation is accomplished by interpreting whether the consequences of the alternatives are beneficial or adverse. (Planning Division 1973: 3-10)

IMPACT ASSESSMENT

- The purpose of impact, or effect, assessment is to identify and measure the changes expected to result from different alternative plans. Impacts are identified by comparing all the components of an alternative plan to the base condition of the region to determine the economic, social, and environmental changes from the condition that are expected to occur with the plan. Impact assessment involves the following activities:

- (1) Categorize the source of impacts, such as inputs, outputs or facilities.
- (2) Identify and trace impacts.
- (3) Specify incidence of impacts, including spatial distribution, and when they will occur.
- (4) Measure impacts.

(Corps of Engineers, Department of the Army. "Urban Studies Program: Proposed Policies and Procedures," Federal Register, 39, 130, Part III (5 July 1974), 24757-58)

Impact assessment is the process through which the changes associated with alternative plans are identified and measured.

An impact is any potentially significant change brought about by an alternative. Impacts are identified by comparing the inputs, outputs, and facility requirements of an alternative to the base condition of the region to determine if a change from that condition is expected to occur.

Because the alternative plans involve actions which may take place in the future, identification of impacts will require forecasting whether significant changes from the base condition can be expected. (Planning Division 1973: 3-8)

"SOCIAL IMPACTS"

Thiel's definition of social effects is concise: they are regarded as those influences which "... change the relationship between people and social institutions such as the family, community, government, schools, churches, etc." (Kanwit 1967: 18)

ANNOTATED BIBLIOGRAPHY

References below are annotated in the following format:

Title
 Author(s)
 Place of publication and other identifying information
 Descriptors/Identifiers
 Locators
 Abstract
 Findings
 Comments
 See also:

"Descriptors/Identifiers" are key words describing the broad subject areas (descriptors) and specific contents (identifiers) of each source. Since the same terms can be used interchangeably, as either descriptors or identifiers according to the author's emphasis, both sets are combined in a single list or index in Appendix 2. Here, identifiers are subordinated by use of a colon, e.g., Attitudes: Flooding and Flood Protection. The former term is the descriptor; the latter, the identifier.

"Locators" simply indicate the physical setting of the studies reported. In certain cases these are highly localized; in others they are area-wide (e.g. river basins).

Abstracts used are those supplied by the author wherever possible. "Findings" are selected to highlight the reviewer's particular interests, however. Comments are his own except where otherwise stated.

"See also" refers to cognate sources a reader may wish to consult.

A Preliminary Model of the Hydrologic-Sociologic Flow System of an Urban Area

Wade Andrews and others.

Logan, Utah: Institute for Social Science Research on Natural Resources and Utah Water Research Laboratory, Utah State University, 1973 (April).

DESCRIPTORS/IDENTIFIERS

Attitudes; Flooding and Flood Protection; Flood Plain Management; Hydrologic System; Interviewing; Methodology; Modeling; Regression Analysis; Social Well-Being; Watershed Management

LOCATORS

Salt Lake Valley, Utah

ABSTRACT

This report describes the first phase of a larger project directed toward developing a general technique for analyzing and solving urban metropolitan hydrologic problems through joint consideration of both the physical and social system dimensions. This particular report is limited to the preliminary work of identifying social variables, the first step of assigning mathematical values and developing a mathematical format for them. In addition, the physical-hydrologic system is identified for purposes of clarifying the element in that system. The ultimate objective of the entire project is to lay out a theoretical and generally applicable mathematical model of both the physical and social dimensions involved in metropolitan flooding problems.

This report is divided into five parts. Chapter I introduces the problem and sets out the scope of the study. Chapter II is concerned with the development of the hydrologic dimension of the model. The methodology and rationale used in developing the conceptual model of the sociological component of the system are presented in Chapter III. A conceptual model of the hydrologic-sociologic system together with generalized mathematical relationships for specific sociological processes are included in Chapter IV. Chapter V sets out the conclusions of the first phase of the project. Specific data, computer programs, and other relevant information are included as appendices.

Both survey data and data collected by agencies and groups in the study area (Salt Lake Valley) are used and modeled by application of multiple regression analysis.

FINDINGS

1. The variable, "perceived likelihood of flooding at present residence," is a central motivating variable for members of the public and is also related to other types of behavior, such as membership in groups or organizations concerned with flood control projects which are instrumental in influencing flood agency behavior.
2. An agency is alerted to a flooding problem by either the hydrologic component (physical systems and their condition) or by public perception of the flood probabilities through the variable "perceived likelihood of flooding at present residence."
3. Emergency and non-emergency action selection processes on the part of agencies emphasize different factors. The selection of emergency actions emphasizes "flood control potential of action" and "cost and other economic factors." Non-emergency action selection emphasizes factors such as aesthetics and recreation as well as opinions of publics and other agencies.
4. There are many more specific findings contained within each section of the report and referring to each part of the model. These are mainly found in Chapter 4, pp. 37-59. Here the sociologic part of the hydrologic-sociologic model is divided into six stages:
 1. State of public opinion information and perception of flooding problems.
 2. Planning agencies or social structure for planning activities and the preliminary proposal process.
 3. Decision agencies or structure for analysis and adoption of proposed plan.
 4. Public reaction process (acceptance, rejection, or adjustment).
 5. Alternative actions subcycle.
 6. Implementation of actions.

For each stage, regression analyses of the most strategic variables are conducted and the results are "plugged-into" the model.

COMMENTS

1. This is an ambitious modeling effort which effectively demonstrates the possibilities of a systemic path model approach to laying the conceptual foundation for impact assessment. It is particularly pertinent to area profiling issues.

Social Costs and Benefits of Water Resource Construction

Rabel J. Burdge and K. Sue Johnson

Research Report No. 64, Lexington: Water Resources Research Institute, University of Kentucky, 1973 (November).

DESCRIPTORS/IDENTIFIERS

Adjustment; Army Corps of Engineers; Attitudes: Relocation/Reservoirs; Benefit-Cost Analysis; Community Cohesion; Evaluation; Interviewing; Methodology; Migration: Forced; Reservoirs; Social Values

LOCATORS

Carr Fork and Cave Run Reservoirs, Kentucky

ABSTRACT

This report analyzes the process of relocating people who must move due to reservoir construction in Kentucky. Using a variety of data obtained in previous studies psychological, social, economic and other material costs and benefits of forced relocation are described and the role of the relocating agency (the Army Corps of Engineers) is examined. Generally, the younger, more affluent and better-educated migrants fare better in the relocation process than the older, poorer and less-educated. Particular attention is paid to those people who found relocation difficult and suggestions are offered for easing their burden. The framework for this report is longitudinal, tracing the relocation process from pre-migration to post-relocation.

FINDINGS

1. Relocation tends to affect people who are poor, often subsistence farmers, with little formal education, and who hold values such as traditionalism, familism, person-centeredness, and fatalism. Many hold negative attitudes toward reservoir construction and the federal government in general.
2. It is not true that knowledge about a project is necessarily a factor in reducing negative attitudes. The tendency toward negativity is greater among those who must be relocated.

3. Positive attitudes are likely when people can see real benefits for them personally or for the whole community (Burdge and Ludtke 1973). Negative attitudes probably arise from the feeling that they are losing something personally.

4. "The mean age of those having to move for the Cave Run Reservoir was 58, and for Carr Fork Reservoir 56 for males and 53 for females. This is considerably older than the U. S. average. Their modal education in both populations was eighth grade; their mean incomes were \$4,000 at Cave Run and \$5,000 at Carr Fork, so they hardly form a well-to-do class. Rural dwellers tend to be very attached to their homes and land. . . . These people lead a life based on personal, individualistic, and familistic relationships--all of which, plus ways and pace of doing things, is disrupted when they have to move. For some people this loss of focus of identification can have catastrophic results."

5. "These data show that a substantial number of people were mistreated by the Corps. They were not helped enough, or were not paid enough for the difficulty and inconvenience of finding a new home. About half the respondents experienced some difficulty in dealing with the Corps, and the major issue was financial cost."

6. "About one-third of the persons whose financial situations worsened (20 of 67) cited relocation as a cause. Frequently cited reasons included the lack of a garden and higher rents and for those with a new business location the necessity for more rent and a decrease in business volume. On the other hand, only a very small number (2 out of 43) whose financial situation had improved cited reservoir-related causes. These two respondents listed a garden and increased business volume as the reason for an improved financial situation."

7. "When asked what social activities had changed the most upon relocation, the majority replied, 'visiting friends.'"

SEE ALSO: Burdge and Ludtke (1973); Ludtke and Burdge (1970); Johnson and Burdge (1974).

"Social Separation among Displaced Rural Families: The Case of Flood Control Reservoirs"

Rabel J. Burdge and Richard L. Ludtke

In: W. R. Burch and others (eds.) Social Behavior, Natural Resources and the Environment. New York: Harper and Row, 1973, pp. 85-108.

DESCRIPTORS/IDENTIFIERS

Adjustment; Attitudes: Relocation/Reservoirs; Benefit-Cost Analysis; Causal Inference; Community Cohesion; Interviewing; Methodology; Migration: Forced; Modeling; Quasi-Experimental Design; Reservoirs.

LOCATORS

Kentucky; Southeast Ohio

ABSTRACT

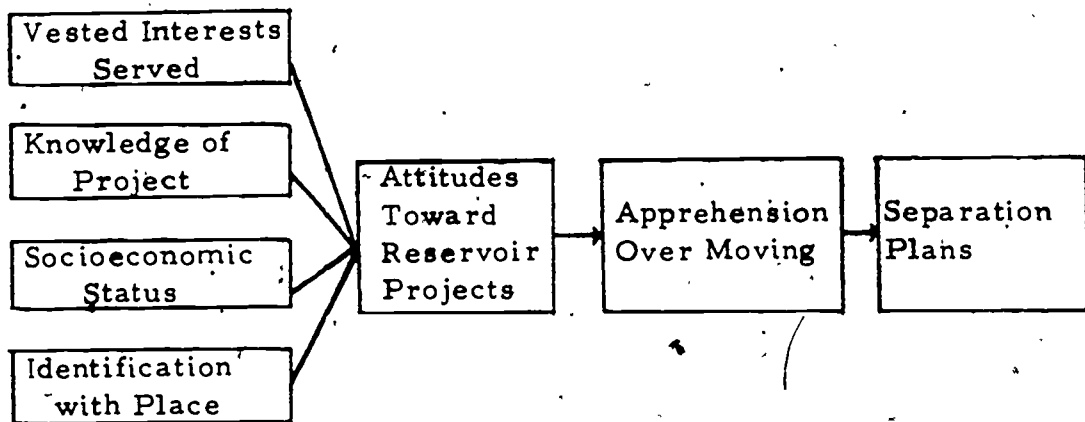
The focus of this paper is on how rural people anticipated forced migration due to reservoir construction. Data were obtained from personal interviews with people about to be flooded by multipurpose reservoirs in southeastern Ohio and central Kentucky. A model is tested in which the variables "vested interests," knowledge of reservoir project, socio-economic status, and the degree of "identification with place" are seen as producing differential attitudes toward the projects. Different attitudes, it is hypothesized, will produce differential apprehension over moving, which in turn will influence individual migration plans. Support for the model is uneven, but the variables "vested interests" and degree of "identification with place" are correlated strongly with attitudes of respondents toward reservoir projects. A most surprising finding is that socio-economic status is not related to attitudes toward projects with sufficient strength to be considered important.

FINDINGS

1. This is a study of how rural people anticipate forced moves. The unique aspect of the phenomenon under study is that return migration is precluded. The main dependent variable is anticipation of migration under this condition.

2. Previous literature on migration is reviewed. None of this research rejects the notion that migration is a stress-producing activity.

3. The model tested is the following:



The design is one which makes causal inferences from non-experimental data. In this design only the concluding variable is seen strictly as a dependent variable. The two intervening variables may be considered as independent or dependent. The initial variables are assumed to be caused by (exogenous) variables outside the system, but are viewed as independent variables in the model. Reciprocal causation (feedback) is ruled out.

4. Results of the test:

1. Apprehension over moving relates inversely with people's willingness to separate themselves from their current friends and homes.
2. People with more favorable attitudes toward the project are less apprehensive over moving and consequently are more willing to engage in moves that require a greater degree of separation from current friends and residence.
3. Vested interests is an exceptionally powerful variable in support of the hypothesis that attitudes affect social migration. Vested interests were found to relate to apprehension indirectly

as predicted, supporting the idea that those persons with vested interests served by a project are more willing to engage in moves that require a greater degree of separation from current friends and residence.

4. Knowledge about the project had a negligible effect on people's attitudes toward the reservoir projects and did not contribute to the explanation of social migration.
5. The level of identification with place was found to relate strongly and consistently with apprehension and consequently produced indirect effects on social separation. Uniformly, the more intense identification with place, the less inclined people were to move.

5. This study, then, suggests a portrait of a person with favorable attitudes toward reservoirs as one who is younger, unresistant to change, has high vested interests in the project, and has an extremely low identification with place of residence. This person is less likely to be apprehensive about moving.

SEE ALSO: Ludtke and Burdge (1970); Burdge and Johnson (1973).

"A Systemic Approach to Social Impact Assessment"

C. Mark Dunning

In: C. P. Wolf (ed.) Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974, pp. 59-64.

DESCRIPTORS/IDENTIFIERS

Evaluation; Groups: Impacted; Planning; Profiling; Publics: Identification of; Systems Approach.

LOCATORS

Pruitt-Igoe (St. Louis, Missouri)

ABSTRACT

In order to gain understanding of potential impacts, a project area may be viewed as a system and the major components and issues identified. By obtaining baseline data on the project area social system, a comparison of this information with the perceptions of this system embodied in plans and planning inputs can be made. Impact assessment, by this method, is a two-part process. In the first part, the project area is disaggregated into major interest groups and publics. Major community issues are also identified so that the character of interrelationships among these groups is more apparent. Utilizing this understanding as a framework, plans are then compared on the basis of the manner in which costs and benefits are distributed over the area. By forecasting future social conditions, given the assumptions of plans or perceptions guiding planning, an understanding of the social trade-offs that alternative plans entail can be developed. This understanding, in turn, can be reapplied to the planning process to add another dimension to choices that must be made in developing project plans. Impact assessment as comparative evaluation can thus aid in the development of plans that may be sensitive to a wider range of political, social and economic groups and issues.

FINDINGS

1. What is the method of systematic analysis?

1. Disaggregate project area into publics and interest groups; specify their goals, their perceptions of important issues.
 2. Compare and evaluate plans on basis of benefit-cost distribution over groups (differential impact analysis).
 3. Choose best alternative in terms of optimum systems advantage.
2. Why do systemic approach?
1. To avoid extreme selective focus or bias toward one group to the exclusion of others.
 2. Need to know whole project area and how it fits together.
 3. Sensitizes one to complexities of project area structure and to salient community issues.
 4. Shows that impacts have different beneficial or adverse impacts on different groups.
 5. Best guide to good planning because it includes important, but easily overlooked, factors.

COMMENTS

1. Girard Krebs ("A Systemic Approach to Social Impact Assessment: A Response to Dunning;" pp. 65-66 in C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc.: Environmental Design Research Association, 1974) warns against the political use of a systems approach in rationalizing planner bias.
2. Krebs further argues that adopting a holistic viewpoint implied in the systems approach forces the question of where to draw boundaries around the impact area and what is the adequacy of social models for handling such complexity. In any case, a systems viewpoint is only the beginning of wisdom, and it cannot substitute for interior as well as exterior viewing of the area under study.

Man and Water--The Relationship Between Social Psychological Systems and Water Resources Development

S. J. Fitzsimmons and O. A. Salama

Cambridge, Mass: Abt. Associates, Inc., 1973 (November).

DESCRIPTORS/IDENTIFIERS

Bureau of Reclamation; Data Sources; Four Accounts Framework; Indicators; Matrix Logic; Methodology; Multiple-Objective Planning; Profiling; Social Needs; Social-Psychological Concepts; Water: Functions/Policy

ABSTRACT

This report is divided into two major sections. The first examines man's social-psychological needs and his water resource development activities and the relationships between the two. The second part develops a set of measurements for determining the nature and extent of these relationships for use in planning for actual water resources development projects.

Part One, "Social Psychological Systems as They Relate to Water Resources Development," begins as a brief "primer" on the content of the various social sciences, followed by a more extensive treatment of sociology and social psychology. Next, a description of the qualities of water and its reclamation is presented. Based on this review, a variety of water functions are identified. Following this is a chapter which attempts to integrate the concepts of the social sciences and the water development functions through a discussion of human social and psychological needs and water development activities. The first part closes with a chapter which explores the relationships between human and water systems and then generates a systematic basis for deriving a set of social data which may be used in water resources planning.

Part Two, "Methods and Procedures for Measuring Relationships," begins with a discussion of the policy context of water resource development. It then explores the program context of water resource development by examining the multiple-objective planning framework within which social assessment must coexist with economic, environmental, technological and budgetary assessments of projects. Following

this is a chapter-length treatment of measures of social psychological variables relevant to water development planning. These measures are construed in a deductive manner, progressing from the earlier analysis of the interface between human and water needs, through policy and program contexts, to data selection. In addition to data specifications, the aspects of data acquisition, validity and reliability, and synthesis and aggregation are discussed and recommendations made. C

SUMMARY

Chapter 1. Based upon their review of the literature the writers come to four conclusions:

1. Until recently there has been a lack of public concern for the social needs of man for water and the impact of water policy on man.
2. There is a gap in the social sciences on the theoretical level with respect to understanding man's relationship to his environment, and certainly with respect to water development aspects.
3. There is also a corresponding lack of research.
4. There is a lack of knowledge at the program level about how to measure the relationships between man and water.

The purpose of this report is to fill in these gaps by proposing strategies for addressing the four problems listed above.

Chapter 2. This chapter discusses concept selection and organization, based on a review of social science literature. From a larger sample of concepts, the writers select a subset to be included in a matrix relating social-psychological concepts to water development functions. Each concept is tied to one (or more) of seven levels of behavioral organization. These are: Individual, Groups, Organizations, Social Processes, Social Maintenance and Change, Society, and Population.

Chapter 3. Water serves a variety of functions for man. Based on the literature, a range of functions was identified which were considered representative of the many types of objectives embodied in reclamation activities. A total of fourteen functions was selected, including ecology

maintenance and control, life support, security, available and predictable supply, quality and distribution, recreation, community, industrial-agricultural and other functions. A given water development activity (e.g., a dam, reservoir, power plant, etc.) usually fulfills a variety of functions simultaneously. Conversely, a given function can be supported by a variety of activities. Activities and functions are arrayed against each other in a matrix.

Chapter 4. This chapter: (1) presents a matrix arraying social-psychological systems concepts against water development functions; (2) indicates ways in which the matrix will be used for analysis; (3) relates the matrix to upcoming chapters on program and policy considerations; and (4) discusses some of the implications and limitations of matrix logic for generating variables.

Chapter 5. This chapter identifies a series of concepts, magnitudes or concerns generically referred to as "parameters" which establish a bridge between the fourteen water development project functions and the seven levels of behavioral organization. Each of the linkages between behavioral categories and water development functions is examined according to its implications for man's needs for water and water's impact on man.

Chapter 6. The political juncture between water resource development and social goals is discussed in this chapter, primarily in terms of the Water Resources Council's "Principles and Standards." A systematic accounting framework is presented at the end.

Chapter 7. The focus here is on multiple-objective planning in the context of water development programs. Certain principles of multiple-objective planning distinguish it from other types. Some of its central features include: implicit criteria to accept or reject a plan, the concept of optimization of choice among project possibilities, long-range planning for change and an interactive or "systems" approach. A section of this chapter is specifically addressed to various ways of looking at and solving the problem of optimization.

Chapter 8. This, the concluding chapter, fills in the cells of the matrix using a large number of indicators presumably relevant at each level of connection between function and behavioral organizations.

COMMENTS

1. The reader who may be interested in this report but who does not wish to struggle through its 400-plus pages is advised to read the excerpts from the report appearing in Wade H. Andrews and others (1973), pp. 117-158.

2. This report disappoints and aggravates in so many ways and at so many points that it is hard to decide where to begin criticism or what is the most strategic critical orientation. In my view the report, in its present form, should not have been written and certainly should not have been published, though its patent deficiencies may prove instructive. Ironically, the service best rendered by Man and Water is a negative one--what not to do--and it unwittingly speaks to the advisability of case-study approaches to the social impacts of water resources development. It is not tenable to argue for the report even on the grounds that it was intended for non-professional audiences because its bulkiness, disorganization, lack of conceptual clarity and methodological looseness altogether convey what may mildly be termed an "unimpressive" picture of the capability of social science to say anything illuminating about the relationship between water and society. If the report is not entirely an incompetent one (and this may be doubted), it is assuredly an inconsequential one. This is a real pity since the need for sound, cogent analysis in the water resources area is manifest. The central problem of the report and that from which most of its substantive shortcomings derive is that the scope and objectives of the study were ill-conceived. These were, in essence, to produce a definitive statement (a "treatise") on the relationship between social-psychological systems and water resources development. The major problem with this is the prematurity of a deductive strategy toward mapping that relationship. The writers apparently thought it to be the most effective strategy although it is difficult to know why since they note at the outset the weakness of the knowledge base from which they work. This strategic error demonstrates in high relief how critical problem formulation is to effective research. Now for some specifics.

3. Three relationships between man and water are postulated:

- a. MAN—needs—→WATER
(+)
- b. WATER—impacts—→MAN (functional)
(§)
- c. WATER—impacts—→MAN (dysfunctional)

These are incomplete, overly simple, and uninformative. For one thing, they omit what I think is a more obvious and important man-water relationship:

d. MAN ^(±) impacts WATER (functional and/or dysfunctional)

Although itself overly simple, d. better expresses the focus of social impact assessment than a., b. and c. That these relationships are uninformative is best revealed by the writers' own statement, which is repeated a number of times throughout the report (the reason for which eludes me):

It is abundantly clear that the relationship between man and water is not symmetric; that man's need for water is not the same as the social impact of water on man. Stated another way, people do not influence environmental infrastructure in the same way as it influences them. It is apparent that the relationship between man and water is asymmetric--that is, man's need for water is not the same as water's impact upon man. (p. 187)

4. The criteria for concept selection are unclear. In fact, "selection" may be too generous a term. The concepts of the social sciences look like a grab bag listing from the indexes of introductory texts. The problem is that there is no clear theoretical rationale underlying or giving meaning to the concepts used. To be sure, the report does state some criteria but they seem irrelevant to the selection process. The major criterion should have been parsimony. Instead, it appears to have been "the more the better."

Besides engendering a certain indifference ("So what?") in the reader, the non-systematic selection and use of concepts also creates real problems of measurement. The writers state that fewer measures (indicators) than parameters (relationships) were identified because a given measure might be used for more than one parameter. If so, this suggests that some kind of factor analysis should have been used to reduce the number of parameters so that a one-to-one relationship between parameter and measure could have been obtained. We need good operational measures of concepts, but the effect of this report's attempts in that direction is to further conceptual and methodological carelessness.

5. In addition to poor concept selection, the report does a shabby job of organizing the concepts selected. It opts for seven levels of behavioral activity. These levels are confusing although they seem systematic. The language of the report confuses even more, referring to these activities variously as "referents," "social concerns" or "levels of analysis." One senses that the writers have not thought out the meaning of their distinctions nor the terms by which they are best expressed. In regard to the levels, they are poorly distinguished descriptively and probably do not all fall within the same logical plane (e.g., lumping together processes and structures seems unwise). Besides, when one finds out what these levels are supposed to encompass it becomes evident that their conceptual connections overlap considerably so that the whole object of distinguishing them is lost. In short, this taxonomy of categories and concepts is worse than useless because it does little to inform and much to obscure. It does not seem difficult to come up with a better one with just a bit more effort and some stricter criteria of inclusion and exclusion. The problem these writers had, I would argue, is that they lacked a guiding theoretical framework so they ended up with the worst kind of eclecticism.

6. The major output of the report is contained in the matrices arraying social-psychological concepts against water development functions and the indicators which are supposed to operationalize these relationships. Looking over these matrices it is apparent that they are quite ineffective because they suffer from all the problems which precede them: poor organization, duplication, proliferation, dubious measures as well as a lack of meaningful policy relevance (an avowed aim of the report). Moreover it is clear that many of the measures do not aptly fit at a given level of analysis (e.g., using population measures to characterize individuals). The strategy the writers should have opted for was to take a very delimited subset of parameters, select the best measures available and suggest how the resulting data connect to the policy-making context.

More could be said about the report on a chapter-by-chapter basis, but the problems addressed above are the most significant and irksome. The scope and objectives of the report, to repeat, were ill-conceived and, not surprisingly, the product reflects this. It may be worth noting that the text is replete with typing and grammatical errors, which suggests that the report received as little editorial attention as its substantive shortcomings received little critical attention. One recommendation is called for: back to the drawing boards and start all over again.

"The National Environmental Policy Act and the Urban Environment:
Toward Socially-Oriented Impact Statements"

Mark Francis

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee,
Wisc: Environmental Design Research Association, 1974. pp. 49-58.

DESCRIPTORS/IDENTIFIERS

Dimensioning Impacts; Environmentalism; Goose Hollow Foothills vs. Romney (1971); Legal Aspects; Natural Environmental Policy Act: Legal History/Social Impact Assessment; Nucleus of Chicago Homeowners' Association vs. Chicago Housing Authority (1973); Planning; Social Goals

ABSTRACT

The intent and scope of this paper is to discuss the impact of the National Environmental Policy Act on urban programs and projects and to schematically propose a framework within which social information can be utilized in environmental impact statement formulation and review. The paper is presented in four sections. The first deals with the common law, constitutional, and statutory rights of the environment, with the major discussion being on the provisions of the National Environmental Policy Act (NEPA). Secondly, recent judicial interpretations of the application of NEPA to the urban environment are discussed. Next, possible future extensions of these court rulings are proposed in relationship to policies and programs administered under federal agencies (HUD, HEW, etc.). And finally, a framework for formulating socially-oriented impact statements within the professions of urban planning and design is presented.

FINDINGS

1. Recently (case of Goose Hollow Foothill League v. Romney, 1971) court interpretations of NEPA have turned to the human urban environment and dealt with impact of the environment on man rather than only impact of man on environment.
2. NEPA has potential of being used against social goals (e.g., Nucleus of Chicago Homeowners' Association v. Chicago Housing Authority, 1973).

3. The applicability of impact statements to urban projects is moving toward making impact statements a standard requirement on "major Federal actions" which "significantly affect" the quality of the human environment.

4. The requirement to prepare an impact statement is currently being legislated by some states--Washington, Delaware, Wisconsin, Hawaii, North Carolina, and especially California.

5. Court actions brought by environmental groups under NEPA have primarily utilized the act as a negative tool intended to stop or delay major federal projects.

6. There is now a need to view environmental impact statements as a positive mechanism whereby Federal agencies can implement and guarantee such social factors as community involvement, user needs, and adequate community services in urban-related programs and projects.

7. Social information requirements for realizing this goal encompass (1) the environmental setting, (2) the offsite macro socio-economic setting, (3) macro onsite socio-economic impacts, and (4) micro onsite user impact. Subcategories are enumerated under each of these major headings.

SEE ALSO: Savatsky (1974).

"Social Impacts of Strip Mining and Other Industrializations of Coal Resources"

Raymond L. Gold

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974. pp. 123-46.

DESCRIPTORS/IDENTIFIERS

Anomie; Attitudes: Coal Industrialization; Coal Mining Impacts; Community Cohesion; Differential Impacts; Economic Impacts; Future Shock; Groups: Impacted; Interviewing; Methodology; Montana Power Company; Participant Observation; Ranchers; Strip Mining

LOCATORS

Colstrip and Gillette, Montana

ABSTRACT

This paper reports findings from five months of ethnographic study in southeastern Montana which focus on the social impact of coal industrialization on groups in the area's two principal towns. Changes noted include shifts in the selection of friends, strains in communicating with friends and neighbors of long standing, a shift in the established power structure from ranchers to new mining industrialists, the need to live with constant and increasing uncertainties for which planning is virtually impossible, a keen interest on the part of some merchants and businessmen in immediate monetary gain, the need to accommodate to the invasion and requirements of newcomers who subscribe to foreign life-styles and value systems, and the loss of a sense of community. Suggestions are offered concerning the meaning of industrialization and rural life to area residents and the theoretical and research implications of these findings.

FINDINGS

1. This report focuses on landowners because, aside from the schools, the biggest social impact to date has been on them.
2. The impacts on merchants are much more economic (and positive) than social.

3. Many life changes have taken hold because of the mining situation:

- a. Shifts in friendship networks and new strains among old friends.
- b. Intensification of class alignments and awareness.
- c. Shift in power structure from ranchers to new mining industrialists.
- d. Constant and growing uncertainties.
- e. Merchant interest in quick money.
- f. Entry of newcomers with different values and life-styles.
- g. Loss of sense of community.

4. Newcomers affect law enforcement, health care, churches, and especially schools. PEOPLE POLLUTION IS THE GREATEST FEAR AND UNCERTAINTY.

5. Locals are fearful of new taxes to pay for increased services demand.

6. There is a decline in neighborliness because there is less need for dependence on fellow-townspeople since new goods and services are available.

7. Future shock and anomie are resulting from disruptions of an industrial technology superimposed on a stable rural environment.

8. Old coalitions are breaking down while new ones emerge:

- a. White and Indian children, formerly at odds, are now coalescing against newcomers.
- b. Businessmen and merchants, formerly dependent on the ranchers, are now trying to share power with the mining companies.
- c. Ranchers who view land as intrinsic value and inalienable home vs. those who see it as an economic tool, business item for profit.

9. One positive result of the mining operations has been the excitement generated by opposition to coal development and the shared purpose gained thereby.

COMMENTS

1. Need to display impacts in tabular form (cf. Mack). Complex group alignments and diverse (differential) impacts need to be partialled out in non-narrative form.
2. Approach is adaptable to both e-model frame and comparative diachronic analysis.
3. The ranchers, we are told, are being exploited; yet they were on top before the mining people came in. How did the mining people break through this rancher dominance in the first place? Do (did) the non-ranchers in the area feel exploited by the ranchers? by the power companies? by the strip miners? What the paper lacks but needs is a more detailed and systematic "before" profile so that better comparisons can be made.
4. Taking the ranchers' point of view lends a very effective and intimate touch to the sociological portrait, but tends to stereotype and/or ignore the views of the other groups.

SEE ALSO: John R. Kelly, "Site-Specific Research: Comments on 'Social Impacts of Strip Mining and Other Industrializations of Coal Resources,'" pp. 147-50 in C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wis.: Environmental Design Research Association, 1974.

Socio-Cultural Impacts of Water Resource Development in the Santiam River Basin

Thomas C. Hogg and Courtland L. Smith

Corvallis: Water Resources Research Institute, Oregon State University, 1970 (October).

DESCRIPTORS/IDENTIFIERS

Attitudes: Dams; Benefactors vs. Beneficiaries; Community Cohesion; Dams; Economic Impacts; Interviewing; Life History Technique; Methodology; Participant Observation; Social Impacts: Staging of; Social Values; Technological Lag

LOCATORS

Albany - Lebanon and Sweet Home, Foster and Green Peter Dams, Santiam River Basin, Oregon

ABSTRACT

This study assesses the impacts of two dams on the behavioral and attitudinal patterns of Santiam River Basin residents in Oregon. The research is structured by viewing the dams through a developmental cycle of preconstruction, construction and postconstruction, thereby highlighting the differential "staging" of impacts. The Santiam River Basin area is treated as a socio-cultural system undergoing important technical and environmental change. The research goal of describing and explaining these changes was accomplished through a combination of methods and techniques, including general survey questionnaires, more detailed open-ended interviewing of selected informants, and biographical data gained through a sociological reconstruction of the life histories of a number of individuals. A major focus is on the varying modes and degrees of integration experienced by the area towns prior to and during the impact stages.

The study finds that socio-cultural impacts of significant magnitude are clearly demonstrable throughout the development cycle. Central emphasis is placed on conceptualizing the project area as part of a larger system whose operation has notable consequences for the more local system. The dams, it is found, caused increased social "non-articulation" in the area's cultural system and stimulated quests for

new bases of social integration by urban escapees. However, lack of articulation and planning between elements of the larger socio-cultural system are restricting full developmental benefits.

Throughout, the writers argue that people's values and actions should be continually sought as inputs into the total water resources development process if full benefits are to accrue to the area. People must be prepared to assume the dual roles of beneficiaries and benefactors if project impacts are to be realistically assessed.

FINDINGS

1. There would appear little problem in stimulating local support and acceptance of water resource development projects, based on the research reported here. This is largely because of the tendency to define economic growth and development as good.
2. In rural communities such as Sweet Home (Oregon), where most of the projects are constructed, the construction phase of the project brings significant short-term expansion and, then, in late stages of construction and early operation, a significant decline. This includes overburdening of local services--schools, municipal works, and commercial facilities.
3. Dissatisfaction with the quality of life in California led to the influx of migrants from there to the project area on speculation that work would be available on the dams. This fact points to the difficulty of establishing boundaries within which the assessment of impacts is conducted.
4. From the point of view of Sweet Home residents, the planning phase of the project stimulated them to think differently about their community.
5. Several kinds of different social and economic impacts are associated with the different phases of pre-construction, construction and post-construction.
6. The most direct impact on the schools was an increase of several hundred students during the construction phase.
7. Most of the added school tax burden was paid for by the local people through increased property taxes. For the most part, the

income taxes paid by the construction personnel went directly to the state government, thereby reducing direct support of the local system.

8. Municipal expenses like those for the schools rose after completion of the dams. City services were improved during construction, but associated with the improvements were increased taxes for the locals. What seems important is that the local people expected the dams to result in long-term growth for which expanded services would be required. The services were expanded but the expected growth did not occur.

9. Only a very small proportion of the total benefits accrued to the local residents and these were mainly recreational. The problem is that the projects were justified primarily on the grounds that they would develop the region. This had the effect of neglecting consideration of local development. Thus, the local community incurred most of the costs but received few of the benefits.

10. In the political area, the influx of urban-suburban migrants resulted in increased legalism and formalism in administrative matters. Formerly, the community had been used to conducting its affairs on a more informal and personal basis. Influence and moral persuasion, rather than the threat of formal sanction, were previously the major means of social control.

11. Economically, problems were created by the underlying faith in and assumption that the dams would bring economic growth and development to the community. Sweet Home is an example of a community which embraced economic growth, but did not realize its expectations. The interesting thing is that the residents seem not to have lost their faith in the ideology of growth.

12. In contrast to most of the residents, people seem to believe that merchants and businessmen did well, especially during the construction phase. Those engaged in recreation-related business will probably continue to benefit, although this will probably not contribute to sustained economic development.

13. The attitudes toward economic development and the influence of more formal and legalistic procedures have contributed to a changed image of the community which has necessitated social and attitudinal adjustments on the part of residents. Sweet Home has become a

more non-articulated community than before construction. What has occurred is the maintenance of specific patterns of roles but less integration and more segmentation between them.

14. The major question, which an impact study should address is who benefits and who pays and how. The emphasis should be on groups as beneficiaries and benefactors as well as on impacts, as costs and benefits.

COMMENTS

1. The authors make an interesting remark about the relation between technological change and social organizational patterns. They write:

[E]xogenous impetus for cultural change may come in terms of ideas and behaviors appropriate to a given technology, even before the technology arrives. Thus, communities may be restructured and reoriented to a particular new way of life well in advance of developing that new subsistence system. This implies that technological change, even in situations of exogenous impetus, is not necessarily causally related to changes of organization and ideology. Furthermore, it implies that settings may, through unique historical circumstances, endogenously develop the ideological and organizational bases for a new technology well in advance of that technology's development. (p. 127)

This inverts the culture-technology relationship from one of "cultural lag" to one of "technological lag." It also suggests that over the long term in situations of technological lag, after the appropriate technology has been grafted onto the social system, there will result an imperfect, possibly sub-optimal fit, thereby producing some new disjunction between technology and culture. At that point the problem then becomes one of technology calling forth a cultural adaptation of ideas, attitudes and values.

"Demographic Effects of Water Development"

John Hollis and James McEvoy III *

In: Charles R. Goldman, James McEvoy III and Peter J. Richerson (eds.), Environmental Quality and Water Development. San Francisco: W. H. Freeman, 1973, pp. 216-232.

DESCRIPTORS/IDENTIFIERS

Demographic Impacts; Recreation; Self-Fulfilling Prophecy; Population Projections; Urbanization; Water; Policy

LOCATORS

Los Angeles, California

ABSTRACT

From a demographic point of view, the crux of the water problem in the United States lies in the discrepancy between the natural distribution of the water supply and the distribution of consumers. In addition, water users "consume" more per capita each year as incomes, spending and leisure time increase. This makes population projections difficult and often risky, a major problem being that the projections often become self-fulfilling prophecies. Population and water demand projections are taken as immutable fact and the "threat" of future water famine prompts water managers to search always farther afield to serve a hypothetical population which might not appear if more water were not made available. The attempt to supply an area with unlimited quantities of water has serious environmental and social effects at both ends of the distribution system, and the magnitude of them will increase as our population continues to concentrate disproportionately in urbanized, semi-arid regions. The historical development of this population-water demand relationship is traced in terms of phases of policy objectives and outcomes, with special reference to the case of Los Angeles. To encourage growth for its own sake is a questionable philosophy in view of the decreasing quality of life it portends. As a start toward better water planning, a national policy should be established to assess all long-term demographic predictions used to justify large-scale water development projects.

FINDINGS

1. From a demographic viewpoint, the crux of the water problem in the United States lies in the discrepancy between the natural distribution of water supply and the distribution of consumers.
2. The demographic history of the United States has been dominated by three major phenomena, all of which are particularly salient in the twentieth century: (1) absolute growth of the population; (2) the movement of population to the West; and (3) increasing urbanization.
3. Recreational use, as opposed to physiological needs for other major uses of water, is an increasingly significant aspect of the value of water, including major impacts on income from recreation and recreational equipment, leisure time and aesthetic beauty.
4. A major problem with population projections as they affect water development is their tendency to become self-fulfilling prophesies. In Los Angeles, for example, population projections were used to justify water resource expansion which, in turn, generated more population growth and attracted industry.
5. Recommendation: The Federal Government should establish a policy of carefully evaluating all population projections used as background to water project proposals. Specifically, efforts should be directed toward determining to what extent a project would create, and not merely serve, a projected population.

SEE ALSO: Smith and Hogg (1971a). Together, these two articles provide a good introductory statement about the relationships between water development and population change.

"The Impact of Open Urban Land on Community Well-Being"

L. Douglas James and Donna R. Brogan

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association; 1974, pp. 151-67.

DESCRIPTORS/IDENTIFIERS

Community Cohesion; Environment; Factor Analysis; Flood Plain Management; Index Construction; Land Use Planning; Methodology; Planning; Quality of Life; Regression Analysis; Social Well-Being; Urban Areas.

LOCATORS

Atlanta, Georgia

ABSTRACT

Many now advocate that flood plains and other open urban space be preserved for recreational activities and visual enjoyment. One important consideration in evaluating this policy is the effect of open land within an urban community on the lives of those who live nearby. This study uses Atlanta data to examine the hypothesis that the well-being of urban residents is associated with their physical environment. The hypothesis is tested by using stepwise multiple regression analysis of 22 well-being indices on selected indices of the physical and social environment. The results substantiate the hypothesis by showing that the association of the indices of the physical environment with the well-being indices is statistically significant and that the indices of the physical environment are approximately equal to the indices of the social environment in their ability to predict well-being. The collective results imply that the most important influence of urban land is its role in attracting or deterring the entry of outsiders into residential neighborhoods. Urban open space can make a definite contribution to urban well-being through development as a barrier separating the residential communities from intense-use areas or through development to contribute to the recreational or aesthetic resources of the community.

FINDINGS

1. Exterior physical characteristics (factors) are statistically significant and as important as socioeconomic factors in explaining

such social problems as arrests, poor mental health, absence from school, fires, etc. In fact, the results indicate that the physical environment is much more important than the socioeconomic factors in associations involving juvenile and drug problems.

2. The findings also illustrate distinct differences in the characteristics of the exterior physical environment associated with different well-being indices: e.g. juvenile arrests are highest among those young people living near recreational opportunities attracting other youth into the neighborhood; narcotics arrests occur most often among people living near gardens, parks and woodlands, etc.

3. The dominant pattern in the regression analyses was that land use patterns that cause large numbers of non-residents to frequent residential neighborhoods are regularly associated with problems for the neighborhood residents.

4. A major policy implication is that urban well-being would be enhanced if areas of intense commercial, industrial or recreational activity were separated from residential areas. This involves two distinct kinds of open space use. One is as vegetative barriers separating residential areas from areas devoted to other uses and subdividing residential areas into communities with which people can identify, and within which they can know one another. The other is to provide within each such community the natural or aesthetic environment and the recreational opportunities that satisfy the needs of its people.

COMMENTS

1. The findings appear overgeneralized for purposes of firm policy guidance. Comparative studies of different cities and neighborhoods is a prerequisite to generalization of the findings.

2. The socio-economic indices are not all good ones--in fact, it is hard to tell the socio-economic indices from the physical environment ones at times. The conceptual distinction informing this operational classification seems fuzzy, or at least overly simple; theoretical coherence may have been sacrificed to measurement methodology.

3. Do the non-subjective (non-individual) grouped data used really get at the concepts tested? Don't we really need some attitudinal

data at least as supplementary data? The validation of objective measures by subjective perceptions would be instructive.

4. Assuming the finding that "land use patterns which cause large numbers of non-residents to frequent residential neighborhoods are regularly associated with problems for the neighborhood residents" is true, the question of a "causal" model providing some explanatory framework for the measured associations becomes acute.

5. Alternative linkage patterns are mentioned at the outset and not developed in subsequent analysis or interpretation of findings. Theoretical development might explore these models more fully.

SEE ALSO: C. P. Wolf, "Comment on 'The Impact of Open Urban Land on Community Well-Being,'" pp. 169-70 in Wolf (ed.), Social Impact Assessment, Milwaukee, Wisc: Environmental Design Research Association, 1974, and rejoinder by the authors, pp. 171-74.

"Social Impact Statements: A Tentative Approach"

Sue Johnson and Rabel J. Burdge

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974, pp. 69-84.

DESCRIPTORS/IDENTIFIERS

Case-Matching; Comparative Diachronic Analysis; Data Sources; Dimensioning Impacts; Methodology; Quasi-Experimental Design; Reservoirs; Survey Research

LOCATORS

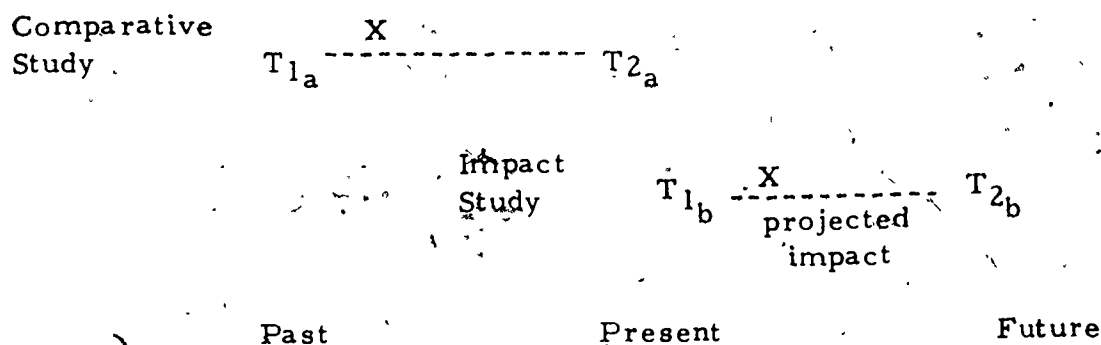
Kentucky (Reservoirs)

ABSTRACT

The general methodology presented here involves using post-construction analysis of a project similar in as many respects as possible to one being proposed to make social impact predictions (comparative diachronic analysis). Consideration is given to the kinds of similarities needed to "match" projects; e.g., geographical location, size and scope of project, and the social and economic characteristics of the affected community. Further attention focuses on the degree of validity associated with primary and secondary data to make the necessary predictions for social impact statements. The examples here deal with reservoir construction projects, but the general methodology with important adaptations can be used for other large-scale projects such as highway construction, urban renewal, waste disposal, and watershed management, among others. Social impact is here divided into two categories: the impact on persons who must be relocated and the project impact on the local community and adjacent counties.

FINDINGS

1. This paper proposes a quasi-experimental design under the name of "comparative diachronic methodology" as one practical approach to social impact prediction:

Schematic Diagram of Comparative Diachronic Methodology

X = Reservoir Construction

2. Data supporting social impact statements occur on various levels. A methodological proposition is advanced that as one moves from level I (census data) to level VII (survey data), validity will increase since the data will better reflect the character of the local area.

3. A substantive point is that relocatees are among the first to be affected by a project and in major ways, starting with the "news" that a project is being planned.

4. The closer the matching on basic community characteristics, the greater the accuracy of impact prediction.

COMMENTS

1. A criterion problem arises as to which characteristics of areas and groups are most important for obtaining a good match. This problem is even more difficult if the method is applied to cities.

2. Besides the problem of matching, the methodology is probably limited when applied to urban situations. The unit of urban analysis is probably not a county, but something like the SMSA and, at a disaggregate level, groups within the city.

3. How does cost-benefit get worked into the methodology? The method needs to be supplemented by a way to measure and weigh impacts.

4. While Johnson and Burdge take the county as their unit of analysis, it is clear that their analytical units are really territorial entities within a defined cultural area. Actually, cultural homogeneity is the most important matching criterion, although what "cultural" means in this context is not clear.

5. There are no political variables among the matching criteria, except that implied by the "purpose" of a proposed project.

SEE ALSO: C. P. Wolf, "Comment on 'Social Impact Statements: A Tentative Approach,'" pp. 85-86 in Wolf (ed.), Social Impact Assessment. Milwaukee, Wis: Environmental Design Research Association, 1974, and reply by the authors, pp. 87-88.

"The Social Impact of Urban Highways"

Lynn G. Llewellyn

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wis.: Environmental Design Research Association, 1974, pp. 89-108.

DESCRIPTORS/IDENTIFIERS

Attitude Surveys; Attitudes: Highways; Community Cohesion; Differential Impacts; Environment: Highway Impacts; Interviewing; Methodology; Migration: Forced; Noise: Highway Impacts; Public Participation

LOCATORS

Baltimore, Maryland

ABSTRACT

Recent interest in the social effects of highways was prompted by urban disorders and the growth of environmentalism. For years the benefits accruing from highway construction had been extolled while little attention was devoted to social costs. This paper examines data on social impact derived primarily from surveys with individuals living in proximity to completed freeways or proposed freeway locations. Included in the presentation are attitudinal data on transportation preferences, perceived highway impacts, and freeway disputes. Special emphasis is also given to the effects of displacement and relocation and to the extreme variability of response to highway traffic noise. The findings suggest that the social costs of freeways are generally borne by the urban poor, minority groups, and the aged.

FINDINGS

1. Perhaps the most unequivocal statement that can be made about highways is that they affect people differentially and they are in turn reacted to in much the same way.
2. The urban poor, minority groups, and the aged are often the victims of short-sighted freeway planning.

3. (The general public, for the most part, favors highway construction. Furthermore, once highways are completed, the majority of those living nearby see more advantages than disadvantages in their presence. On the other hand, opposition to certain types of highways, particularly freeways, is increasing in various localities. Opinion surveys and case studies of freeway controversies suggest that some groups are more likely than others to resist freeways, but for quite different reasons. Senior citizens, as they become increasingly dependent on public transportation, avoid freeways, possibly because they fear high speeds. Anxiety may also contribute to lower tolerance for freeway noise among the elderly. Low-income, non-white, inner-city residents oppose freeways on the grounds of community disruption and the high probability that, if anyone is to be displaced (with inadequate compensation and inferior replacement housing), they will be the victims. Those with higher incomes and more education, especially professionals, frequently combat freeways on environmental and aesthetic grounds (e.g., increased noise and air pollution are common complaints). Concern about the safety of children and the physical deterioration of neighborhoods is typically mentioned by several population groups.

4. The consequences of displacement are often most severe in low-income areas, or those communities heavily populated by minority groups and elderly, long-term residents. But all too often highway route selection has followed the path of least political resistance--precisely the localities just described.

5. The data suggest that actual sound levels do not correlate highly with reported disturbance; other factors such as age, length of residence, socio-economic status, and attitudes toward one's immediate environment (and toward highways in general) appear to account for more of the variance. There is also evidence indicating that the type of noise, and the difference between ambient noise levels and that produced by freeway traffic, are sometimes more important than absolute noise levels. Perhaps the most disturbing findings are those reported by Glass et al. (1973) relating the intensity and duration of freeway noise to impaired learning. If nothing else, it underscores the fact that many questions about the impact of noise remain unanswered.

6. In order of frequency of neglect, the problem areas identified as most in need of research in the area of highway impact are:

- mass transit alternatives
- impact on taxes and tax base
- increased urbanization
- nearby property values
- disposition of public comments
- community disruption
- "no-build" alternatives
- noise pollution
- air pollution

COMMENTS

1. Michael A. Perfater ("Comment on 'The Social Impact of Urban Highways,'" pp. 109-10 in C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association 1974) complains that Llewellyn has uncritically accepted the dated and biased assertions of highway critics.

2. Perfater contends that where abuses existed they have since been rectified by recent legislation such as the Relocation Act of 1972 and the requirement that state highway departments submit "Action Plans" detailing planning procedures and provisions for public involvement.

SEE ALSO: Llewellyn's "Reply to Perfater's Comments on 'The Social Impact of Urban Highways,'" pp. 111-12 in C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974.

Evaluation of the Social Impact of Reservoir Construction on the Residential Plans of Displaced Persons in Kentucky and Ohio

Richard L. Ludtke and Rabel J. Burdge

Research Report No. 26, Lexington: Water Resources Research Institute, University of Kentucky, 1970.

DESCRIPTORS/IDENTIFIERS

Adjustment; Attitudes: Reservoirs; Benefit-Cost Analysis; Community Cohesion; Interviewing; Methodology; Migration: Forced; Modeling; Quasi-Experimental Design; Reservoirs

LOCATORS

Caesar Creek Reservoir, Ohio; Taylorsville Reservoir, Kentucky

ABSTRACT

This research was initiated to develop and test a model for explaining migration under conditions of forced displacement and relocation. Data for the study come from investigation of questionnaire responses by populations in Ohio and Kentucky who were affected by the planning and construction of reservoir projects. The model includes a consideration of people's potential for transferring existing statuses to new residences, the extent to which people's interests are served by the reservoir, people's knowledge of the reservoir, the social class backgrounds of those displaced, and the extent to which people identify with their places of residence. These factors are viewed as affecting people's levels of apprehension and consequently their willingness to separate from their current membership systems.

The testing of the model indicated that apprehensions over moving are greatest for those who identify strongly with their present residences; that apprehension over migration is less for those whose vested interests are served by the reservoir; and that knowledge of the reservoir project did not reduce apprehensions over moving as predicted by the model. The writers suggest that the deleterious impacts of reservoir projects could be reduced if agencies planning the projects would develop and use more effective mechanisms for including affected people's views in the planning process.

FINDINGS

1. Apprehension over moving relates inversely to people's willingness to separate themselves from their current friends and homes.
2. People with more favorable attitudes toward projects were less apprehensive over moving and as a consequence were more willing to engage in moves that require greater degrees of separation from their current friends and types of residence.
3. One of the main independent variables, "type of status transfer," was predicted to vary inversely with apprehension. The findings showed little support for this relationship. The status transfer variables did, however, relate to the measure of separation. The extent of transfer of primary relationships was strongly related, in a negative direction, with people's willingness to separate from their current friends.
4. The presence of commuting did not relate to apprehension, but commuters did appear less willing to separate themselves from either their friendship groups or type of community than non-commuters. People with a history of mobility, on the other hand, did seem less apprehensive over moving in general and more willing to separate from both friendship groups and their current community types.
5. Vested interests proved to be an exceptionally powerful variable. Those with interests enhanced by a reservoir project expect to engage in moves requiring the greatest amount of separation.
6. Knowledge had a negligible effect on people's attitudes toward the reservoir project and did not contribute to the explanation of social migration.
7. Socio-economic status also failed to relate to people's attitudes toward reservoir projects. However, separation from place was found to be directly facilitated by socio-economic status.
8. Identification with place related consistently and strongly with apprehension and consequently produced indirect effects on social separation. Uniformly, the more intense identification with place, the less inclined people were to engage in social separation.

SEE ALSO: Burdge and Ludtke (1973); Burdge and Johnson (1973).

"Criteria for Evaluation of Social Impacts of Flood Management Alternatives"

Ruth P. Mack

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association. 1974, pp. 175-95.

DESCRIPTORS/IDENTIFIERS

Army Corps of Engineers; Attitudes: Dams; Community Cohesion; Dams; Differential Impacts; E-Model; Economic Impacts; Evaluation; Flood Plain Management; Groups: Impacted; Interviewing; Methodology; Modeling; Optimization; Participant Observation; Social Values; Social Well-Being; Trade-Offs.

LOCATORS

North Springfield, Vermont

ABSTRACT

This is a descriptive and analytical study of two cases of water resource management--the flood in Westfield, Massachusetts and the construction of a dam in North Springfield and Weathersfield, Vermont. The report covers the period from 1955 to 1971 for both cases, thereby allowing developmental comparisons over time. The major intent of the report is to develop a method for systematically assessing and evaluating differential impacts and their relationships to various community groups. This task is carried out in terms of an explorative ("e-") model which is grounded in economic utility theory and which aims to measure household utility optimization as it is affected by project impacts. The specific impacts in both cases are identified, analyzed, and displayed in terms of the e-model frame. A central conclusion is that social impacts are substantial relative to economic ones--proportions of 40 to 60 for the flood and 45 to 55 for the dam. Moreover, impacts of different kinds fell on different groups: economic impacts, largely positive, were most associated with business and industry; social impacts, largely negative, were most associated with residents and townspeople. The report concludes with a discussion of criteria for designing and selecting alternatives in flood management protection programs and endorses approaches which attempt to maximize planning flexibility and management means which are sensitively designed at all phases of program development.

FINDINGS

1. Social impacts are substantial relative to economic ones.
2. Both social and economic impacts fall on different groups with different effects. A major theme of paper is differential impacts.
3. As between what might be called the service and source areas of flood control benefits, it is abundantly clear that the service area, primarily businessmen in Springfield, uniformly benefit and the large majority of such benefits are economic. The source area, on the other hand (Weathersfield and Perkinsville), made large sacrifices, the majority of which were social.
4. The tabular display of impacts and impacted groups gives a detailed analysis of impact magnitudes and directions (i. e., whether "positive" or "negative" and to what degree). Some examples may give an idea of these concrete impacts:

Planning and Purchase of Basin Property: People whose property may be taken or who may be cleared out of areas and forced to find new homes uniformly suffered negative impacts including litigation costs, uncertainty about the future, reduction of income from capital in property, the tension of controversy, etc..

Clearing of Basin, Dam Construction, and Aftermath: People who were relocated suffered significant losses including loss of income, difficulties of forming new community and personal relationships, loss of leisure time due to relocation, etc. In contrast, business interests tended to benefit substantially from dam construction because of additional income accruing from enhanced value of flood plain property and potential expansion of business in the protected area.

COMMENTS

Shields (1974) first raises questions about Mack's "imputational method":

1. Where do the numbers come from? How were weights assigned to the various impacts? Are they "objective" measures or "subjective" judgments? A methodological note on this matter should be appended to the Report.

2. The utility categories are too vaguely distinguished, especially for purposes of concrete case analysis. They all make sense in their own terms, but tying them to the specific impacts is somewhat arbitrary in the sense that different observers using the same model and looking at the same concrete impacts could differ widely in their assignments of utility categories. Maybe what is needed is a set of operational measures for each category.

3. This is related to point 2. Why are some of the utility categories economic, others social, and still others environmental? Also, what is involved in the term "environmental"? As used in the Report, it seems to include typically cultural things--ideas, beliefs, aesthetics, etc. This use confuses the meaning of "social." The idea of designating utilities as economic, environmental, or social is, I take it, to connect the individualistic utility categories to more macro-scale units or concepts. This should be done more systematically: the underlying theoretical rationale and principles of classification should be explained.

4. Again, this bears on the impact types--economic, environmental, and social: why are there three types identified in the text, but only two are used in the display tables? There is a disjunction here between the conceptual discussion and the actual impact analysis.

5. While many impact groups are identified, it is not clear to what extent their memberships overlap. Overlapping group memberships should result in more intense impacts (1 or -) on those members. This raises the possibility of "impact inconsistency."

6. Evaluative activity is central to the e-model, but is virtually ignored in the impact analysis and display. Evaluative activity is completely absent in the display table for the dam.

7. Whereas the Report is a study of two different cases of flood management, there is very little in it by way of explicit, detailed paired-comparison. It would be useful if the comparative possibilities were more fully exploited.

Economic and Social Impact of Recreation at Reclamation Reservoirs:
An Exploratory Study of Selected Colorado Reservoir Areas

J. Gordon Milliken and H. E. Mew Jr.

Denver, Colorado: Denver Research Institute, University of Denver,
1969.

DESCRIPTORS/IDENTIFIERS

Attitudes; Reservoirs; Economic Impacts; Interviewing; Land Use
Planning; Methodology; Recreation; Reservoirs; Tourism

LOCATORS

Shadow Mountain/Granby and Horseshoe Reservoirs, Colorado

ABSTRACT

Three reclamation reservoirs in Colorado were studied twenty years after construction to determine the economic and social impact of recreation. Two were remote scenic mountain reservoirs (studied as a single area) while the third was a foothills reservoir near a city of 40,000 population. The methodology included questionnaires and interviews with recreationists and businessmen and analysis of land value changes.

Substantial direct economic impacts were found in both areas. These included: (1) increases in the value of land, improvements, and recreation facilities; (2) increases in tax revenue; (3) increases in retail sales of goods and services to recreationists; (4) increases in boat sales; (5) increases in expenditures for operation and maintenance of recreation facilities; and (6) the creation of more jobs.

Socio-cultural impact was also studied and significant differences were found between typical groups of recreationists using the two areas. These included differences in socioeconomic characteristics, place of residence, preferred recreation activities, frequency and duration of visits, and expenditures and investments in recreation equipment. The study forecasts future socioeconomic impact in both reservoir locations and hypothesizes general types of impacts that can occur at other water-oriented recreation areas.

FINDINGS

1. Primary economic impacts of both reservoir areas were salient and positive. These included: (1) increases in land and property values; (2) tax revenue increases; (3) increases in retail business sales; (4) increases in employment. Secondary economic impacts were not discussed in the article.
2. Shadow Mountain/Branby Reservoir users are typically families with 2-3 children, parents of between 30 and 49 years of age, out-of-state vacationers, with above average occupational status and incomes above or about \$10,000 per year.
3. Horsetooth Reservoir users are typically area (Denver SMSA) residents, families, with above average occupational status and incomes between \$10,000 and \$14,000 per year. They are likely to go to the area for weekends and engage in fishing or water skiing.
4. Recreationist demand for the areas is expected to continue increasing, thus promoting further major economic impact.
5. Regarding social impacts, the reservoirs created substantial new recreational opportunities, although it is hypothesized that even without the reservoirs the area would have experienced a growth in recreational use and opportunities.
6. In their literature review, the authors found age, income, and occupational status the primary factors influencing participation in, and discrimination among, recreation activities.

- The greatest demand for all types of outdoor recreation is concentrated in metropolitan areas and preference is for weekend use.

- Both of the above trends are expected to continue into the future.

COMMENTS

1. One positive note is their attention to "history." It should be said, however, that such attention is almost inevitable by the nature of the

study and the cases selected since it discusses the impact of reservoirs built twenty years prior to the study. History here involves accounting for impacts (mainly economic) prior to the time of the study and since the building of the reservoirs.

2. This paper pays scant attention to social impacts. In fact, the impacts noted are as much economic as social despite the label "social." Generally, the social impact part is concerned with characteristics of users of the reservoirs, not with such things as impacts on community and area residents (except for businessmen, where the impacts cited are economic). One section does imply positive impacts on Denver area residents who are the largest users of the Horsetooth Reservoir and there is some discussion of population growth (though no indication is made as to how population growth was or was not independently affected by the reservoirs). Even where the impact "improved recreational opportunities" is discussed, it is noted that recreational opportunities and use of the areas would probably have increased regardless of the reservoirs. This may tell us that a study which specifically focuses on economic impacts will find little in the way of social impact to report, even when such impacts may be strong. Of course, the alternative interpretation is that while social impacts beyond those briefly noted may have been in evidence, they were fairly insignificant compared to major economic impacts.

3. One highly noteworthy point about this study is that almost no one seems to have been adversely affected by the reservoirs. This goes for both social and economic impacts. In fact, the reservoirs appear to have been a real plus to the area as well as to the Denver Metropolitan area. This constitutes the first "bona fide" example of an impact study which describes nearly universally good results for the impacted area and groups. The reservoirs even improved the aesthetic quality of the area. (Can it really be that the projects were nearly universally beneficial or is the analysis deficient?)

4. The report does not deal with or estimate the extent of secondary impacts, both social and economic. It may be that focusing on some secondary impacts would have revealed certain adverse impacts.

"Social-Psychological Response to Forced Relocation Due to Watershed Development"

Ted L. Napier

Water Resources Bulletin, 8, 4 (August 1973), 784-795.

DESCRIPTORS/IDENTIFIERS

Adjustment; Alienation; Attitudes: Watershed Development; Benefit-Cost Analysis; Community Cohesion; Interviewing; Methodology; Migration: Forced; Quasi-Experimental Design; Watershed Management

LOCATORS

Ohio, West Virginia (Watersheds)

ABSTRACT

This paper analyzes the social-psychological response of rural community residents to the impacts of forced relocation due to externally-imposed water resource development. The study was conducted within two communities in West Virginia and two in Ohio, all of which had been recently involved in watershed development. Two other communities were selected as controls. Groups within each affected community were divided into non-relocated/relocated and initial and post-shock groups. Three hypotheses were tested: (1) community groups directly affected by forced relocation will become alienated from the changing community situation; (2) relocated people in the affected community groups will exhibit greater alienation than the non-relocated community groups; and (3) alienation will decrease as the affected groups adjust to the changed situation. None of the hypotheses is supported. Affected groups' attitudes about their community situation appear to be a function of variables other than the stimulus of forced relocation. Negative attitudes were present in the affected groups, but they were mainly directed toward the change agent and toward the inconvenience of physical relocation rather than toward social relationships within the community.

FINDINGS

1. This is a quasi-experimental design study which attempts to evaluate the social-psychological response of local residents to forced displacement and relocation due to watershed development. The dependent variable is community alienation.

2. Three hypotheses are tested:

1. Community groups which are directly affected by forced relocation of population due to water resource development will become alienated from the changing community situation.

2. Relocated people in the affected community groups will exhibit greater alienation than those in the non-relocated groups.

3. Alienation resulting from the disruptive effects of externally imposed change will decrease as affected groups adjust to the changed community situation.

3. None of the hypotheses is accepted. Forced relocation of people due to watershed development did not consistently result in alienated subject groups in the manner predicted. Affected groups' attitudes about their community situation seem to be affected by variables other than the stimulus of forced migration. Negative attitudes were present among the groups, but they were directed toward the external change agent and the inconvenience of physical relocation rather than toward social relationships within the community.

4. A partial explanation for the apparent lack of community alienation may be attributed to the relocation pattern of the displaced people. The relocated groups moved or intended to move within the non-inundated portions of the affected communities. They were able, therefore, to maintain group memberships or believed that they would be able to maintain group memberships. Apparently the maintenance of group memberships prevented the fragmentation of established interaction patterns and therefore counteracted tendencies toward alienation.

COMMENTS

1. Valid conceptualization and measurement of "alienation" are exceedingly difficult. But ignoring this problem, the interesting point about this study is that it tested the less obvious hypotheses about alienation and found the more obvious one to hold. That is, it would appear that relocated people would more plausibly be "alienated" from the agency responsible for their forced move than the community in which the move occurred. And this is precisely what was found. "Apprehension" over the move and the necessity to form new social relationships is probably the more appropriate variable when it comes to assessing reactions to a changed community situation (Burdge and Ludtke 1973). Or it may be that alienation, as the absence of solidary ties, may be avoided in impact situations like this one if there is an available out-group (the change agency) to scapegoat.

"Social Effects of Nuclear Power Plants"

Elizabeth Peelle

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974, pp. 113-20.

DESCRIPTORS/IDENTIFIERS

Differential Impacts; Dimensioning Impacts; Environment; Groups; Impacted; Methodology; Nuclear Power Plants; Social Impacts; Radiation; Perceived Danger; Trade-Offs.

LOCATORS

Mendocino Nuclear Power Plant, California

ABSTRACT

Social effects of building and operating nuclear power plants result from impacts upon (1) socially-valued aspects of the physical environment and (2) the social structure itself. Sudden, temporary population growth during construction may strain financial and organizational resources of rural areas. Large increases in tax base result from operation of privately-owned power plants, affecting tax structures and land use balances in site-specific fashion.

Assessment of impacts involves dimensioning with fourteen descriptors, and analysis of impact recipient groups. Dissociation of social costs and benefits may occur (1) through time lag between costs and benefits, (2) when different groups are beneficiaries and payees, and (3) through vagaries of institutional structure. Assessment of social costs and benefits usually involves non-equivalent currencies of exchange, and raises serious analytical and methodological problems for a final cost-benefit balance. Social impact alternatives are listed as are requirements for adequate social impact analysis.

FINDINGS

1. There is usually a striking dissociation between costs and benefits of nuclear power plants through: (1) time lag between costs and benefits, (2) different groups being beneficiaries and payees, and (3) vagaries of

institutional structure--in short, through the pervasiveness of differential impacts.

2. Population growth and the resulting demand upon local services and community structures are the major construction impacts upon the affected area.

3. A major impact of large installations such as privately-owned power plants is their effect upon tax structures and thus upon the balance of land uses.

4. Impacts may be dimensioned by at least fourteen descriptors:

- | | |
|----------------------------|---------------------------------------|
| (1) time | (8) quantifiability |
| (2) location | (9) synergistic effects |
| (3) directness | (10) magnitude |
| (4) singularity | (11) cumulativeness |
| (5) perceived desirability | (12) certainty |
| (6) importance | (13) differential impact on people |
| (7) reversibility | (14) differential impact on resources |

5. Three major categories of social impacts emerge from the building and operation of a nuclear power plant: (1) impacts upon socially-valued aspects of the physical environment; (2) impacts upon the social structure itself; and (3) perceived danger of radiation.

6. An enumeration of the items which a social impact statement should address includes:

1. Systematic identification of social costs and benefits.
2. Analysis of social costs and benefits (dimensioning, etc.).
3. Quantification of social costs and benefits.
4. Identification and analysis of impact recipients.
 - a. Mixed impact groups.
 - b. Multiple impact groups.
 - c. Separation of beneficial and adverse impact recipients.
5. Reducing problem to sets of identical beneficiary-payee groups.
6. Quantification of costs and benefits in terms of impact recipients.
 - a. Number of recipients of each impact.
 - b. Intensity of impacts

7. Limiting/reducing unquantifiables.
8. Determining acceptable cost-risk levels.
9. Establishing equivalence among values.
10. Choosing an appropriate social discount rate.
11. Producing a final social cost-benefit balance.

COMMENTS

1. William T. White ("Comments on 'Social Effects of Nuclear Power Plants,'" pp. 121-22 in C. P. Wolf (ed.), Social Impact Assessment, Milwaukee, Wisc: Environmental Design Research Association 1974) notes that as well as construction and operation, emphasis should also be placed on the social impacts of site selection. Moreover, there is a synergism present in the clustering of site locations that site-specific studies ignore.

2. White further believes that "life-style" as a social impact category has not been properly addressed and that theoretical development of such conceptualization is a pressing need that no amount of quantitative measurement will serve.

"A Legal Rationale for the Sociologist's Role in Researching Social Impacts"

Pamela Dee Savatsky

In: C. P. Wolf (ed.), Social Impact Assessment. Milwaukee, Wisc: Environmental Design Research Association, 1974, pp. 45-47.

DESCRIPTORS/IDENTIFIERS

Legal Aspects; National Environmental Policy Act: Social Impact Assessment.

ABSTRACT

In order to justify a mandate for social impact analyses where no explicit legal document exists, it is necessary to explore recent federal acts concerning environmental impact analyses. The most pertinent for this purpose is the National Environmental Policy Act of 1969. This act declares a policy of encouraging productive and enjoyable harmony between man and his environment through impact of man's activity on the interrelations of all components of the natural environment. The argument of this paper is that such a policy implicitly, but obviously, demands social impact analyses as well as environmental ones.

FINDINGS

1. Through implicit communication, NEPA (National Environmental Policy Act) has declared the necessity for human and therefore social impact assessments.

COMMENTS

1. The argument presented is sound. The real task now is how to best organize social science inputs into developing more formal and explicit guidelines and also how to most strategically follow the legal route. There are hazards to avoid (Wolf 1974: 34) and they are greater than those associated with environmental impact legislation because of the multiplicity of values and interests at stake.

SEE ALSO: Francis (1974).

"Cultural Aspects of Water Resource Development Past, Present, and Future."

Courtland L. Smith and Thomas C. Hogg

Water Resources Bulletin, 7, 4 (August 1971), 652-660.

DESCRIPTORS/IDENTIFIERS

Bureau of Reclamation; Demographic Impacts; Economic Growth; Social Values; Water: Policy.

LOCATORS

Western United States

ABSTRACT

Attitudes toward the development of the American West have undergone significant changes over the past century as the nature of water resources as factors in development have changed. Viewing these changes processually, stages for water resources definition and use can be identified in the total process of western cultural development. The first involves the value of water resource development as a stimulus to population and economic growth. The second stage, still in progress, adopts a dominant cultural norm which sees water development as inevitable if not necessary to keep up with growth. The third stage is incipient. Future cultural values with respect to water resource development will be to look at it as a means for controlling or managing both the location and quantity of population and economic growth. To this end planners will have to become concerned with the questions of human adaptation. Concern will have to be given to the problems of getting a living which enables individuals to meet the subsistence needs of self and family, to establishing community which provides for cooperation among individuals and the management of conflict, to establishing improved communication which promotes interpersonal interaction, and for fostering innovation which provides the new ideas necessary to adapt to new environmental situations.

FINDINGS

1. There have been three stages in the development of water policy in the United States:

1. 1862-Pre-World War II: Early water resource development was undertaken in the American West in order to stimulate population migration into the frontier.
 2. Post-World War II to 1970 (Earth Day): During this period the goals of planning seem to have shifted from a population settlement and growth ethic to a concern for using water resource planning to keep up with population growth.
 3. Post-1970: Unregulated population growth is being questioned and many are suggesting that population size be seen as a dependent variable to be managed either up or down by careful planning, of which water resource planning is only a part.
2. The cultural functions which are most important to water resource planning are adaptation to the environment, the gaining of subsistence, the establishment of a meaningful community, the enhancement of communication and the stimulation of innovation.
 3. The present water resource planning culture has too often dealt solely with demographic variables of births, deaths and migration to project population growth rates. There is consequently a need for planners of this culture to take account of prevailing cultural dimensions which influence variations in demographic variables.

COMMENTS

1. This article serves nicely as a companion piece to Hollis and McEvoy (1973). Together, they are a good historical and theoretical framework for understanding the relationships between water development and population change.

Quality of Life in Kickapoo Valley Communities

E. A. Wilkening and others.

Report No. 11. Madison: Institute for Environmental Studies, University of Wisconsin.

DESCRIPTORS/IDENTIFIERS

Attitudes; Community Leaders/Dams; Community Cohesion; Community Leaders; Dams; Interviewing; Methodology; Participant Observation; Profiling; Quality of Life; Reputational Method

LOCATORS

Kickapoo Valley and LaFarge Dam, Wisconsin

ABSTRACT

This report is the second in a series dealing with the economic and social impact of the LaFarge Dam on the Kickapoo River in southwestern Wisconsin. It is the intent of the study to establish social and economic baseline information on communities to be affected by a reservoir project before that project is completed. It illustrates a method for measuring the impact of the dam on people and institutions, using secondary sources and data collected by personal interviews with community leaders who were selected by a reputational method. Future studies of the same region will assess changes occurring as a result of the project, thereby building a continuous record of socio-economic changes in a flood control project.

The report briefly presents the economic history of the region and its population changes since 1890. Most of the report consists of a display and discussion of the responses of community leaders in the twelve communities in answer to questions concerning their opinions of services, facilities, leadership and the overall "quality of life" in their communities. The study also gives some indication of reservoir impacts anticipated by area residents. It was timed to take place before the LaFarge Reservoir was constructed but after most of the land had been purchased. A later report of the series will focus on changes in land ownership, values and use.

FINDINGS

1. This study, part of a larger long-range effort, establishes baseline data about the social and economic characteristics of the communities which will be affected by the LaFarge Dam before it is completed. Future studies will assess changes occurring as a result of the completed project, thereby compiling a continuous record of socioeconomic changes in the area.

2. The reservoir to be created by the dam is expected to attract new recreationists and business to the communities to counteract the business and population decline in the area. But these changes will have impacts on life-styles and institutions. The purpose of this study is to provide a basis for assessing these changes so that citizens and policymakers can take account of them in future decisions about projects of this kind.

3. Some tentative recommendations are offered:

1. The total impact of a study of a project of this kind should include information about the social and economic consequences for individuals, institutions and services.

2. Impact studies need to be made early and by disinterested parties rather than by the agency having an interest in the promotion of the project.

3. Information about the decision to build major structures such as the LaFarge Dam should be disseminated as widely and as early as possible. Lack of information contributes to the problems of those who are forced to sell their land and make adjustments.

4. The LaFarge Dam will affect several communities above and below the dam. Some will benefit more than others. Maximizing benefits will require the cooperation of all people living in the watershed above the dam and immediately below it.

5. Measures of the impact of water management upon personal well-being and quality of life requires gathering a wide range

of both objective and subjective data. In combination, the two types of data complement each other in validating the measure of quality of life in an area before and after a project is built.

6. The subjective evaluations of leaders in the community may provide a substitute for a more comprehensive survey of a random sample of people:
4. Of the 127 questions on the interview schedule, only two deal directly with perception of impacts.
5. The majority of the leaders saw no effect of the dam on property taxes in their communities. Less than ten percent of those in the valley thought there would be an increase because of the need for more public services and a few thought the decrease in land taken off the property tax rolls would increase taxes.
6. In response to the question, "How much influence do you think the LaFarge Dam will have on the community?" most of the leaders in Ontario and LaFarge thought it would be "quite a lot." The responses of the leaders in the other communities varied considerably. The majority in all communities, except Muscoda and Richland Center, felt there would be "some" or "quite a lot" of effect, but many were uncertain as to the effect. The major advantages of the dam were perceived as economic benefits from tourists and recreation and from industry new to the area. Only one in eight saw the major benefit as flood control. A few see the reservoir as attracting "undesirable" people and as producing problems of drugs, drinking and the need for added police protection. The change in lifestyle and business patterns with out-of-town summer tourist trade is viewed as a disadvantage by some and as an advantage by others.

COMMENTS

1. Dual use of reputational interviewing and more objective secondary census data sometimes has effect of making sensible interpretation of findings impossible because of the discrepancies between the leaders' ratings and the other indicators. On the other hand, this combination makes for increasing interpretation precisely because of the discrepancies.

2. To ask leaders to rate themselves and use that as the only measure of leadership effectiveness is dubious. It is useful to find out what leaders think of themselves, but that hardly constitutes a valid measure of leadership effectiveness.
3. This is mainly a descriptive study. What it lacks is some explanatory scheme which attempts to fit together all the pieces of data about the area studied. Also, it doesn't always do a good job of weighting the differences between communities on a given indicator. We end up with a jumble of evidence in need of interpretation.
4. The reputational technique has another disadvantage: it tends to undercut the role of conflict between groups in a community. If there is dissatisfaction or disagreement between leadership and public, these are not likely to get a fair airing through interview of leaders alone. For this reason it is doubtful that "the subjective evaluations of leaders in the community may provide a substitute for a more comprehensive survey of a random sample of people."
5. As the authors suggest, the value of this report may not be apparent until follow-up studies are done so that an evolutionary picture of the area is obtained.
6. Some salient cleavages identified in the study are: "insiders" vs. "outsiders," farmers vs. non-farmers, in-valley vs. out-of-valley, and state vs. region. These are of course pertinent to the question of differential perception of impacts.

Sociological Factors in Watershed Development

Kenneth P. Wilkinson and Lucy W. Cole

State College: Water Resources Research Institute, Mississippi State University, 1967 (July).

DESCRIPTORS/IDENTIFIERS

Attitudes: Watershed Development; Field Theory; Interviewing; Planning; Public Participation; River Basin Development; Watershed Management

LOCATORS

Mississippi (Watershed Projects)

ABSTRACT

This paper (1) develops a strategy and frame of reference (the interactional or field theory approach) for sociological investigation of the community and related social influences on watershed development; (2) reviews the literature of the social science which bears on this problem; and (3) compiles preliminary information on watershed development programs in Mississippi. These tasks are carried out as part of a long-range research program to assess the influence of sociological factors in water resources management, particularly at the local level.

The strategy proposed in connection with (1) integrating certain aspects of the work of social scientists and water management professionals has been carried out in only a preliminary, fragmentary fashion. Partly as a result of this, the proposed theoretical frame of reference has yet to be employed in research on the most salient and critical water resources problems. Findings of the review of literature reported in connection with (2) point to the need for a systematic classification and evaluation of the theoretical and methodological assumptions underlying social science research in this area. A start is made toward identifying social factors which influence watershed development, but the concepts and methods employed for this purpose are useful mainly in case studies of specific localities. Sophisticated studies using a large sample of communities must await development of more precise operations for measuring social-organizational aspects

of communities. The information reported in connection with (3) is intended to expand the base for generalizing from the earlier case studies through analysis of selected data on all small watersheds in Mississippi.

SUMMARY

Chapter 1. The "interactional" or field theory approach to studies of water resources is proposed. Little theoretical convergence has been accomplished in the body of studies conducted thus far. This suggests that a systematic theory is needed to focus concentrated programs of research.

Chapter 2. On the basis of a review of literature in the water resources area, it is concluded that "human behavioral problems pervade many aspects of water management programs." Much of the literature focuses on the problem of public participation. Also, an economic benefit-cost analytical procedure seems to predominate. The writers argue that what is needed "is a concerted effort to apply the theories and methods of basic research" to the sociological study of water problems.

Chapter 3. This chapter reviews the more specific studies on watershed development programs in Mississippi. In concluding the writers note that the theoretical frame of reference outlined in Chapter 1 has yet to be applied.

COMMENTS

1. This paper, perhaps because it was written at a time when the social science input into water resources management was so weak and pessimistic, reveals excessive concern for the role of the sociologist in the planning process. In fact, the substantive contributions discussed are more related to this question than to substantive questions themselves. Sociologists get hung up about this too much; we'll only be taken seriously when we begin to offer good problem-solving research.

2. It is hard to see how the "interactional approach" is superior to the systems approach. A problem in taking Parsons' scheme as the model is that scant connections will be found. Also, characterization of social systems approach is one-sided--i. e., on its failure to deal with change. Potential application of interactional approach appears dubious.

3. As a literature review and guide, this paper is still useful. It is very sketchy, however, and would have been more potent if it had selected a smaller set of problems and developed them more intensively. Its primary value is as a "scanning" device for literature review.

"The Effects of Urban Renewal upon a Black Community: Evaluation and Recommendations"

J. Allen Williams, Jr.

Social Science Quarterly, 50, 3 (December 1969), 703-712.

DESCRIPTORS/IDENTIFIERS

Attitudes: Urban Renewal; Community Cohesion; Evaluation; Housing: Replacement; Interviewing; Methodology; Migration: Forced; Minorities: Urban Renewal; Quality of Life: Urban Renewal: Housing.

LOCATORS

Austin, Texas

ABSTRACT

Although the dysfunctional consequences of urban renewal projects have been well documented, some proponents appear to believe that recent changes in policy and administration have solved the previous problems. The purpose of this paper is to present findings from a study conducted in a recently completed urban renewal project in a black area in Austin, Texas and to make several recommendations based on the findings. It is an evaluative study in that it attempts to assess the impacts of the project in terms of the goals of urban renewal. In general, few if any positive impacts are found and most of the impacts are clearly negative. For example, decent housing was not obtained by over one-third of the respondents, higher housing costs were incurred in the change, many complained of having been placed in an unsuitable living environment, and segregation was not diminished. Moreover, respondents complained that the move and the new area contributed to a sense of loss of community, including separation from friends and long-time neighbors. Recommendations for change include greater compensation for displaced families, better timing on the part of the relocating agency in displacing people from their old residences, and increased use of public service personnel to assist relocated families with a range of problems.

FINDINGS

1. About one-third of the relocated households did not obtain "decent" housing; 70.5% of all households in the sample took on an increased financial burden after relocation.
2. The majority stated that there had been no change for the better in physical characteristics of their living environment.
3. The majority indicated little or no change in convenience to facilities and the number stating they are less conveniently located was twice that of those who felt more conveniently located.
4. Many feel the change has improved their lives regarding the honesty of the people and as a place to raise children, but many also expressed the view that safety after dark and police protection had declined.
5. There has been an overall improvement in tax revenue and commerce.
6. The project in no way contributed to ethnic desegregation through relocation.
7. Loss of community was highly salient for some (26.3%) but not uppermost in most people's minds.
8. Few households have received assistance through contact with service agencies.
9. The most salient need is to provide ways of minimizing harm to relocatees, including more funds to displaced households. Execution of renewal plans should be carefully staged so that housing becomes available prior to displacement. The aims of urban renewal may be incompatible; if so, priorities among the objectives should be established on the basis of need.

COMMENTS

1. This kind of evaluation research needs to be expanded: larger samples, different projects, different areas. Site-specificity limits the generalizability of results and the applicability of recommendations.

DESCRIPTORS AND IDENTIFIERS

Adjustment (social-psychological)

Burdge and Johnson (1973)

Burdge and Ludtke (1973)

Ludtke and Burdge (1970)

Napier (1972)

Urban renewal

Williams Jr. (1969)

Watershed development

Napier (1972)

Wilkinson and Cole (1967)

Alienation

Napier (1972)

Attitude Surveys

Llewellyn (1974)

Anomie

Gold (1974)

Benefactors vs. Beneficiaries

Hogg and Smith (1970)

Army Corps of Engineers

Burdge and Johnson (1973)

Mack (1974)

Wolf (1974)

Benefit-Cost Analysis

Burdge and Johnson (1973)

Gold (1974)

Llewellyn (1974)

Mack (1974)

Peelle (1974)

Attitudes

Coal industrialization

Gold (1974)

Community leaders

Wilkening and others (1973)

Dams

Hogg and Smith (1970)

Mack (1974)

Wilkening and others (1973)

Flooding and flood protection

Andrews and others (1973)

Highways

Llewellyn (1974)

Relocation

Burdge and Johnson (1973)

Burdge and Ludtke (1973)

Reservoirs

Burdge and Johnson (1973)

Burdge and Ludtke (1973)

Ludtke and Burdge (1970)

Milliken and Mew (1969)

Bureau of Reclamation

Fitzsimmons and Salama (1973)

Smith and Hogg (1971a)

Case-Matching

Johnson and Burdge (1974)

Causal Inference

Burdge and Ludtke (1973)

Coal Mining Impacts

Gold (1974)

Community Cohesion

Burdge and Johnson (1973)

Burdge and Ludtke (1973)

Gold (1974)

Hogg and Smith (1970)

James and Brogan (1974)

Community Cohesion (cont'd)

Llewellyn (1974)
 Ludtke and Burdge (1970)
 Mack (1974)
 Napier (1972)
 Wilkening and others (1973)
 Williams Jr. (1969)

Community Leaders

Wilkening and others (1973)

Comparative Diachronic Analysis

Johnson and Burdge (1974)

Dams

Hogg and Smith (1970)
 Mack (1974)
 Wilkening and others (1973)

Data Sources

Fitzsimmons and Salama (1973)
 Johnson and Burdge (1974)

Demographic Impacts

Hollis and McEvoy (1973)
 Smith and Hogg (1971a)

Differential Impacts

Gold (1974)
 Llewellyn (1974)
 Mack (1974)
 Peelle (1974)

Dimensioning Impacts

Francis (1974)
 Johnson and Burdge (1974)
 Peelle (1974)

E-Model

Mack (1974)

Economic Growth

Smith and Hogg (1971a)

Economic Impacts

Gold (1974)
 Hogg and Smith (1970)
 Mack (1974)
 Milliken and Mew (1969)

Environment (physical)

James and Brogan (1974)
 Llewellyn (1974)
 Peelle (1974)

Environmentalism

Francis (1974)

Evaluation

Burdge and Johnson (1973)
 Dunning (1974)
 Mack (1974)
 Williams Jr. (1969)

Factor Analysis

James and Brogan (1974)

Field Theory

Wilkinson and Cole (1967)

Flood Plain Management

Andrews and others (1973)
 James and Brogan (1974)
 Mack (1974)

Four Accounts Framework

Fitzsimmons and Salama (1973)

Future Shock

Gold (1974)

Goose Hollow Foothills vs. Romney (1971)

Francis (1974)

Groups

Impacted

Dunning (1974)
Gold (1974)
Mack (1974)
Peelle (1974)

Highway Impacts

Llewellyn (1974)

Housing

Replacement (urban renewal)
Williams Jr. (1969)

Hydrologic System

Andrews and others (1973)

Index Construction

James and Brogan (1974)

Indicators

Fitzsimmons and Salama (1973)

Interviewing

Andrews and others (1973)
Burdge and Johnson (1973)
Burdge and Ludtke (1973)
Gold (1974)
Hogg and Smith (1970)
Llewellyn (1974)
Ludtke and Burdge (1970)
Mack (1974)
Milliken and Mew (1969)
Napier (1972)
Wilkening and others (1973)
Wilkinson and Cole (1967)
Williams Jr. (1969)

Land Use Planning

James and Brogan (1974)
Milliken and Mew (1969)

Legal Aspects

Francis (1974)
Savatsky (1974)

Life History Technique

Hogg and Smith (1970)

Matrix Logic

Fitzsimmons and Salama (1973)

Methodology

Andrews and others (1973)
Burdge and Johnson (1973)
Burdge and Ludtke (1973)
Fitzsimmons and Salama (1973)
Gold (1974)
Hogg and Smith (1970)
James and Brogan (1974)
Johnson and Burdge (1974)
Llewellyn (1974)
Ludtke and Burdge (1970)
Mack (1974)
Milliken and Mew (1969)
Napier (1972)
Peelle (1974)
Wilkening and others (1973)
Williams Jr. (1969)

Migration

Forced

Burdge and Johnson (1973)
Burdge and Ludtke (1973)
Llewellyn (1974)
Ludtke and Burdge (1970)
Napier (1972)
Williams Jr. (1969)

Minorities

Urban Renewal

Williams Jr. (1969)

Modeling

Andrews and others (1973)
Burdge and Ludtke (1973)
Ludtke and Burdge (1970)
Mack (1974)

Montana Power Company

Gold (1974)

Multiple-Objective Planning
Fitzsimmons and Salama (1973)

National Environmental Policy Act
(NEPA)

Legal history

Francis (1974)

Social impact assessment

Francis (1974)

Savatsky (1974)

Noise

Highway impacts

Llewellyn (1974)

Nuclear Power Plants

Social impacts

Peelle (1974)

Nucleus of Chicago Homeowners'
Association vs. Chicago Housing
Authority, (1973)

Francis (1974)

Optimization

Mack (1974)

Participant Observation

Gold (1974)

Hogg and Smith (1970)

Mack (1974)

Wilkening and others (1973)

Planning

Dunning (1974)

Francis (1974)

James and Brogan (1974)

Wilkinson and Cole (1967)

Profiling

Dunning (1974)

Fitzsimmons and Salama (1973)

Wilkening and others (1973)

Public Participation

Llewellyn (1974)

Wilkinson and Cole (1967)

Publics

Identification of

Dunning (1974)

Quality of Life

James and Brogan (1974)

Wilkening and others (1973)

Williams Jr. (1969)

Quasi-Experimental Design

Burdge and Ludtke (1973)

Johnson and Burdge (1974)

Ludtke and Burdge (1970)

Napier (1972)

Radiation

Perceived danger

Peelle (1974)

Ranchers

Gold (1974)

Recreation

Hollis and McEvoy (1973)

Milliken and Mew (1969)

Regression Analysis

Andrews and others (1973)

James and Brogan (1974)

Relocation (see Migration: Forced)

Reputational Method

Wilkening and others (1973)

Reservoirs

Burdge and Johnson (1973)

Burdge and Ludtke (1973)

Johnson and Burdge (1974)

Ludtke and Burdge (1970)

Milliken and Mew (1969)

River Basin Development
Wilkinson and Cole (1967)

Self-Fulfilling Prophecy
Population Projections
Hollis and McEvoy (1973)

Social Goals
Francis (1974)

Social Impacts
Staging of
Hogg and Smith (1970)

Social Needs
Fitzsimmons and Salama (1973)

Social-Psychological Concepts
Fitzsimmons and Salama (1973)

Social Values
Burdge and Johnson (1973)
Hogg and Smith (1970)
Mack (1974)
Smith and Hogg (1971a)

Social Well-Being
Andrews and others (1973a)
James and Brogan (1974)
Mack (1974)

Strip Mining
Gold (1974)

Survey Research
Johnson and Burdge (1974)

Systems Approach
Dunning (1974)

Technological Lag
Hogg and Smith (1970)

Tourism
Milliken and Mew (1969)

Trade-Offs
Mack (1974)
Peelle (1974)

Urban Areas
James and Brogan (1974)

Urbanization
Hollis and McEvoy (1973)

Urban Renewal
Housing
Williams Jr. (1969)

Values (see Social Values)

Water
Functions
Fitzsimmons and Salama (1973)
Policy
Fitzsimmons and Salama (1973)
Hollis and McEvoy (1973)
Smith and Hogg (1971a)

Watershed Management
Andrews and others (1973)
Napier (1972)
Wilkinson and Cole (1967)

Well-Being (see Social Well-Being)

LOCATORS

Albany-Lebanon, Oregon
Hogg and Smith (1970)

Atlanta, Georgia
James and Brogan (1974)

Austin, Texas
Williams Jr. (1969)

Baltimore, Maryland
Llewellyn (1974)

Caesar Creek Reservoir, Ohio
Ludtke and Burdge (1970)

Carr Fork Reservoir, Kentucky
Burdge and Johnson (1973)

Cave Run Reservoir, Kentucky
Burdge and Johnson (1973)

Colstrip, Montana
Gold (1974)

Foster Dam, Oregon
Hogg and Smith (1970)

Gillette, Montana
Gold (1974)

Green Peter Dam, Oregon
Hogg and Smith (1970)

Horsetooth Reservoir, Colorado
Milliken and Mew (1969)

Kentucky (reservoirs)
Burdge and Johnson (1973)
Burdge and Ludtke (1973)
Johnson and Burdge (1974)
Ludtke and Burdge (1970)

Kickapoo Valley, Wisconsin
Wilkening and others (1973)

LaFarge Dam, Wisconsin
Wilkening and others (1973)

Los Angeles, California
Hollis and McEvoy (1973)

Mendocino Nuclear Power Plant,
California
Peelle (1974)

Mississippi Watershed Projects
Wilkinson and Cole (1967)

North Springfield Dam, Vermont
Mack (1974)

Ohio
Southeastern reservoirs
Burdge and Ludtke (1973)
Watersheds
Napier (1972)

Pruitt-Igoe (St. Louis, Missouri)
Dunning (1974)

Salt Lake Valley, Utah
Andrews and others (1973)

Santiam River Basin, Oregon
Hogg and Smith (1970)

Shadow Mountain/Granby Reservoirs,
Colorado
Milliken and Mew (1969)

Sweet Home, Oregon
Hogg and Smith (1970)

Taylorsville Reservoir, Kentucky
Ludtke and Burdge (1970)

Western U. S. Water Development
History
Smith and Hogg (1973)

West Virginia Watersheds
Napier (1972)

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